THE OIL WEEKLY

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The Oil Man's Calendar

JUNE	
15-16	**Pennsylvania Grade Crude Oil Association, Pittsburgh, Pa.**
July	
10-17	**American Institute of Mining and Metallurgical Engineers Regional Meeting, San Francisco, Calif.**
AUG.	
1- 6	**The Eastern United States Michigan Oil & Gas Exposition. Mt. Pleasant, Michigan.**
SEPT.	
4- 8	**American Society of Mechanical Engineers, New York.**
5	**Oil Workers International Union, Hammond, Ind.**
11-15	**American Chemical Society, Boston, Mass.**
13-15	**National Petroleum Association, Atlantic City, N. J.**
OCT.	
4 -6	**American Institute of Mining & Metallurgical Engineers, Petroleum Division, Galveston, Texas.**
9-10	**American Gas Association Annual Convention, New York.**
16-20	**National Safety Congress, Atlantic City, N. J.**
18-20	**Independent Petroleum Association of America, Fort Worth, Texas.**
19-20	**American Institute of Mining & Metallugical Engineers, Petroleum Division, Los Angeles.**
NOV.	
13-17	**American Petroleum Institute, 20th Annual Meeting, Stevens Hotel, Chicago.**
15-17	**American Institute of Chemical Engineers, Providence, R. I.**
DEC.	
4-7	**American Society of Mechanical Engineers, Philadelphia.**

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This Week's Panorama

PRESENT circumstances in the oil industry are comparatively favorable, and further improvement is promised.

The relatively strict curtailment of crude oil production that is scheduled under June allowables probably will bolster the markets for both crude and refined oils.

Profitable Product Prices Sought

Oil company executives lately have pointed to the long-continued disparity between prices of crude and finished products, which has precluded possibilities of profit on refining operations.

One large company head, H. F. Sinclair, chairman of Consolidated Oil Corporation, following a profitless first quarter for his concern, has asserted and reiterated that one or the other of two things must happen: (1) refined product prices must be advanced enough to permit profit, or (2) crude oil prices must be reduced, to permit the refiner a margin between his raw material cost and the prices he realizes for products turned out. He added that he hoped lower crude prices could be avoided, and that the problem could be solved by an advance of product prices to better and fairer levels.

It is a matter of record that low prices of gasoline and other products, combined with somewhat smaller crude oil production, have caused sharp curtailment of oil company earnings so far this year. In the initial quarter, aggregate earnings were about 60 percent lower than in the corresponding period last year—and 1938 profits were only about one half as good as those of 1937.

Sinclair Says Calamity Can Be Avoided

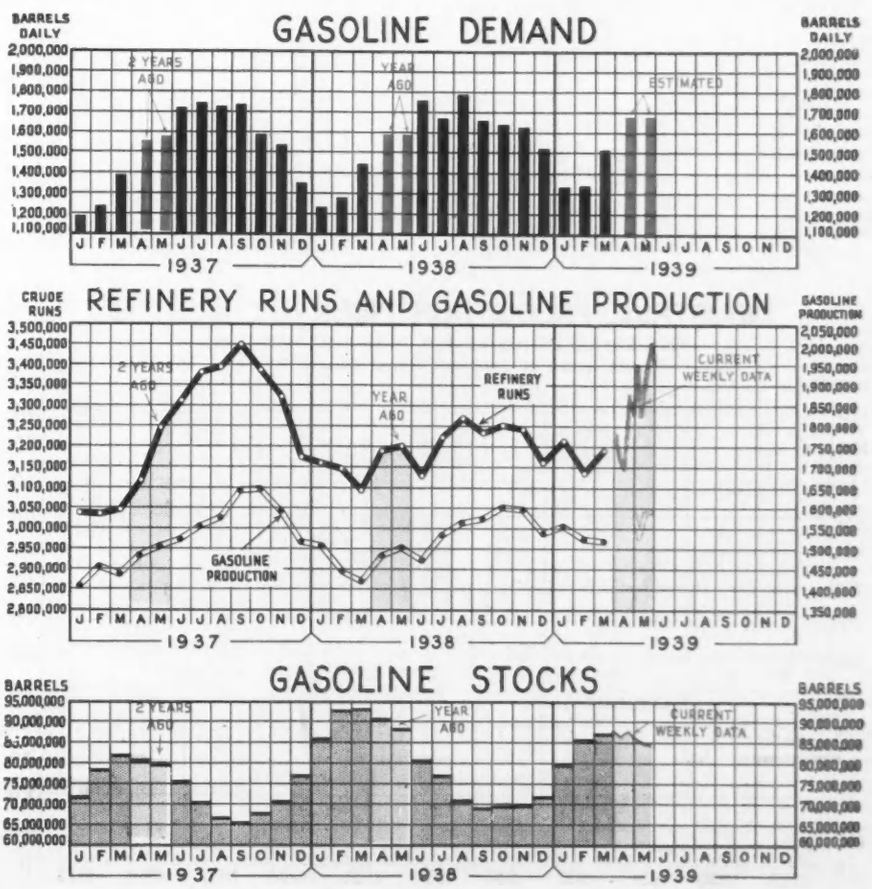
H. F. Sinclair commented at length to stockholders regarding the oil industry situation, and expressed the belief that a cut in crude oil prices could and should be avoided by better prices for finished products. He expressed disagreement with two other executives, John A. Brown, president of Socony Vacuum Oil Company, and W. S. Farish, president of Standard Oil Company of New Jersey, who were reported to have said that the industry was not receiving prices for finished products commensurate with the cost of crude oil but that they did not believe better prices for products could be realized.

"I still think," stated Sinclair, "that if the problem were approached from a different angle we could avoid what I regard as almost a calamity. But nobody can expect that the purchasers of domestic crude oil are going to keep on losing the substantial difference now existing between what we pay for oil and what we get for the products.

"The picture is a discouraging one. Here is an industry that has not, like some others, suffered from lack of demand for its products. It contributes more than four billion dollars a year to the national income in the form of wages, royalties, rentals, equipment, transportation charges, and taxes. Its payroll alone is a billion and a half

Gasoline Inventories Are Moderately Reduced

Remarkably good demand has tended to justify heavy refinery runs and large production of gasoline, as evidenced by continued withdrawals from storage.



dollars a year. How can such expenditures be continued unless we receive a fair price for our products?

"I believe the public is willing to pay a fair price in order that the industry may be able to continue its contribution to national prosperity, provide the enormous amounts of new money that are required, meet its wage bill, pay its stockholders a reasonable return on their investment, and give those who produce its raw material what crude oil is really worth.

"We have enough sick industries. I don't want to see the oil industry added to the list."

Gasoline Market Continues Firm

The disparity between crude and refined oil prices has been partially corrected in the past two months, through betterment of the product prices; and recent developments have indicated that further similar correction may be in store.

The gasoline market has continued firm, following a gradual advance of both tank car and tank wagon prices; and further improvement is regarded as quite possible, inasmuch as demand remains brisk, with some refiners buying in the open market to supplement their own production.

Gasoline prices at the refineries are about ¼ cent a gallon above the abnormally low levels to which they sank in the early months of this year, but they are about ¼ cent lower than at this time last year.

Dealer tank wagon prices have improved less than ¼ cent a gallon in the past two months, and are almost ¾ cent lower than a year ago.

Refinery Runs of Crude Near Record Level

Although the gasoline market has shown some improvement in recent weeks, it has been handicapped by exceptionally large refinery runs and gasoline production, which have somewhat interfered with normal seasonal withdrawals of gasoline from storage, despite remarkably large consumption.

After having jumped in the previous week to an all-time peak of 3,460,000 barrels daily, crude runs to stills dropped back to 3,405,000 barrels a day in the week ended May 27. But despite that reduction, the runs remained comparatively large, having been 8.4 percent higher than in the comparable week last year, whereas demand for petroleum products is not showing quite that much improvement over a year ago.

Gasoline production in the week ended May 27 partially reflected the record runs of crude to refinery stills in the previous week, having increased 6000 barrels daily to a new peak for this year of 1,597,000 barrels a day. The output for the week was 11,180,000 barrels, compared with 11,139,000 barrels the week before.

Despite the large production, however, the industry was able to take about 400,000 barrels of gasoline out of storage in the week ended May 27, as the markets continued to absorb even more than the refineries were currently turning out. The total finished and unfinished gasoline stocks in the United States came down during the week to 84,152,000 barrels.

That supply was 4.3 percent smaller than the 87,946,000-barrel inventory held at the corresponding time last year. But stocks were so excessive last year as to result in greatly depressed markets. And although gasoline demand is better this year than last year, it is indicated that market requirements can be adequately and efficiently fulfilled through the maintenance of working stocks smaller than those of last year.

Lagging of Industry Calls for Caution

The advisability of conservative crude oil production and refinery runs is suggested by the persistent decline of industrial production.

For this lagging of industry, if continued, ultimately will affect oil consumption adversely.

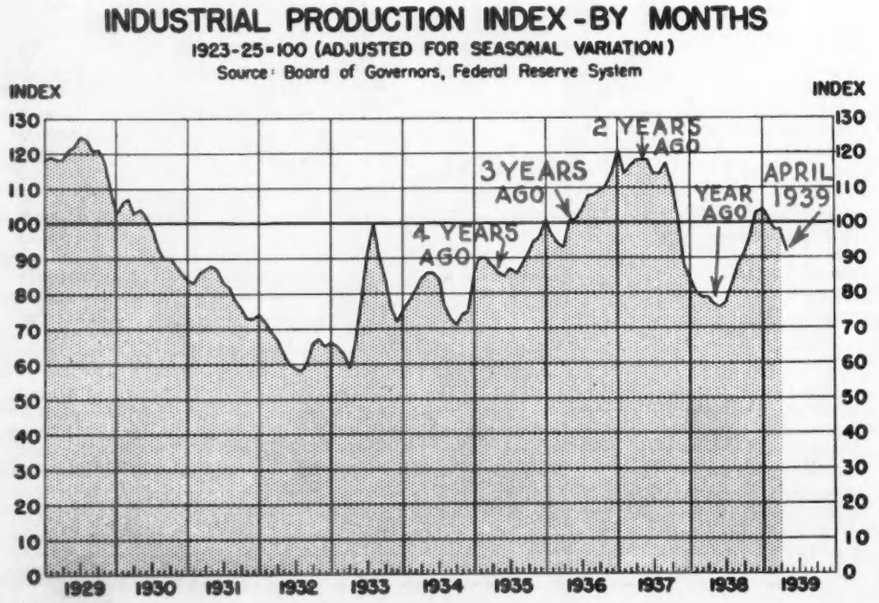
As shown on a chart presented herewith, the Federal Reserve Board's index of industrial production declined sharply in April to 92 percent of the 1923-1925 average, the lowest point since last September.

During the revival of 1938, the index rose to a high of 104 in December. But it then declined to 101 in January of this year, was at 98 in both February and March, and dropped to 92 in April. It was at 77 in April of last year.

The board's seasonally adjusted index of durable goods manufactures declined in April to 77 from 80 in March; it was at 53 in April, 1938.

The index of non-durable manufactures declined in April to 105 from 110 in March; it was at 91 in April of last year.

In contrast with the decline in industrial production, however, the movement of commodities into the hands of consumers showed about the usual seasonal increase.



A FURTHER sharp decline of industrial production in April has given warning of possible less favorable trends of oil demand in the future.

More Carbon Black Use Aids Natural Gas Industry

By L. J. LOGAN, Associate Editor

THE natural gas industry markets about 15 percent of its production to carbon black producers, and its welfare depends, therefore, to a considerable extent on conditions in the carbon black industry.

It is encouraging to the natural gas industry, consequently, that this year is bringing for carbon black producers some improvement over the highly unsatisfactory conditions of 1938.

Prices of carbon black were advanced on January 1 this year, after having been greatly depressed in 1938; and sales have been relatively good this year, as industrial activity has been on a higher level in 1939 than in 1938. The combination of better prices and better volumes of business naturally have made possible better results.

Especially helpful have been the sharply higher production and sales of new automobiles, trucks, and tractors, as the new motor vehicles require tires, into which almost 90 percent of carbon black production goes. (The comparatively low levels of production and sales of automobiles in 1938 were largely responsible for decreased demand for carbon black in that year.)

Prices of carbon black were remarkably steady from the NRA code period until late 1937, but then weakness developed abruptly, and car-load lot prices were lowered from 4 to 2¼ cents a pound. The latter price was in effect in most of 1938. But at the beginning of this year the domestic price in carload lots was raised by most producers to 3 cents a pound.

In its recently published annual report on the carbon black industry, covering 1938, the Bureau of Mines attributed the unsatisfactory results of that year to the behavior of prices, which it said "fell to unprecedented low levels." The bureau found that the average value of carbon black production at plants was 2.41 cents a pound in 1938, compared with 3.41 cents in 1937, two additional cuts in spot prices having been made in January, 1938, following the abrupt weakening of prices in the latter part of 1937. The reductions brought the standard zone price below the generally accepted production cost of 3 cents a pound.

Although the average export value was comparatively well maintained, it dropped to 4.51 cents a pound in 1938 from 4.72 cents in 1937.

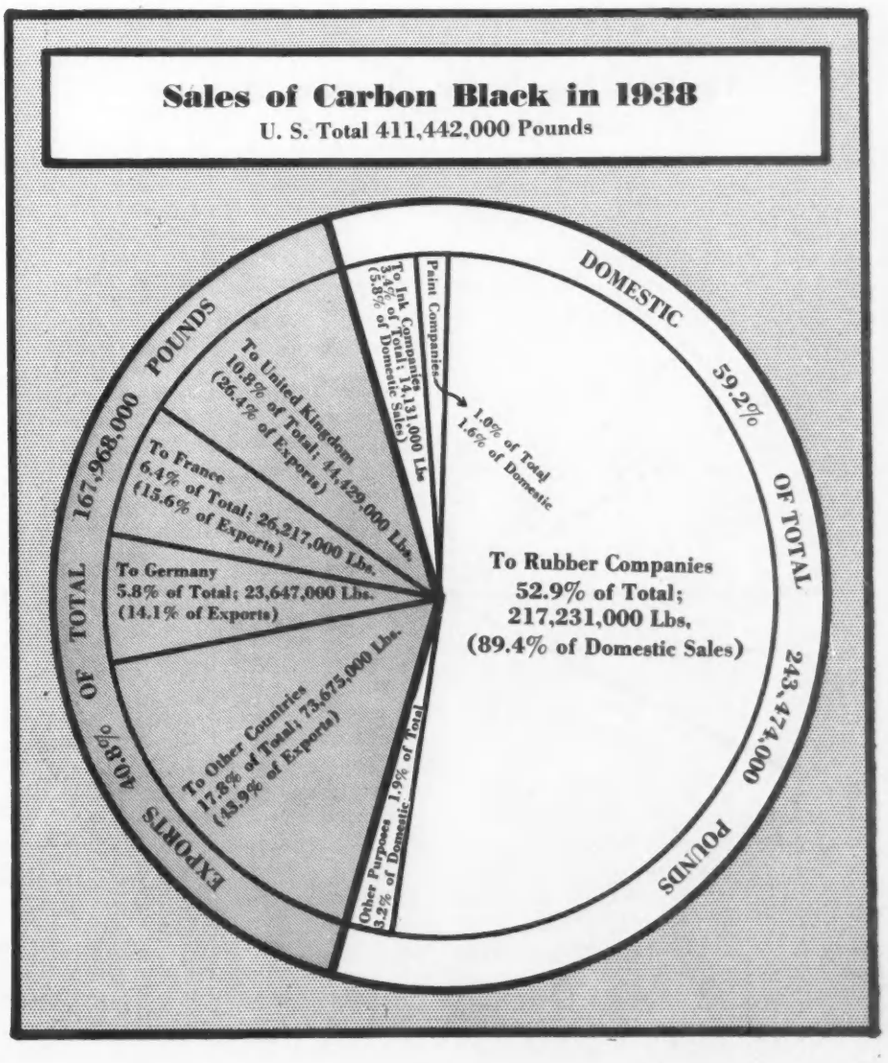
The depressed prices of 1938 doubtless resulted from the sharp curtailment of demand and the accompanying build-up of inventories, despite lowering of production.

Total sales of carbon black in 1938 amounted to 411,442,000 pounds, which was 16 percent less than in 1937.

Of the total sales in 1938, domestic shipments constituted 59.2 percent and exports 40.8 percent.

The domestic sales of 243,474,000 pounds in 1938 were 20 percent smaller than those in 1937, and the exports of 167,968,000 pounds were 9 percent down.

Of the domestic sales the rubber

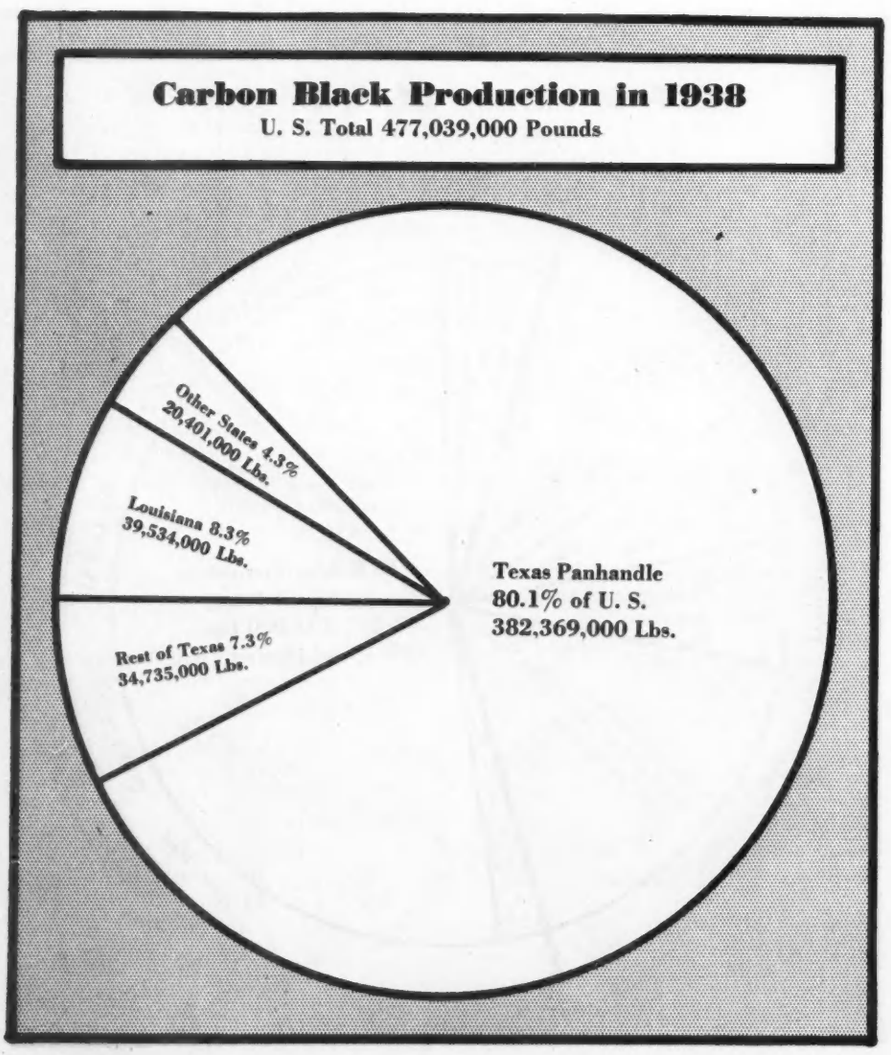


Statistics of the Carbon-Black Industry in 1937 and 1938

(Source: Bureau of Mines)

	1937	1938
Number of producers reporting	24	24
Number of plants	57	55
Quantity produced (pounds):		
Louisiana	66,381,000	39,534,000
Texas:		
Panhandle	405,247,000	382,369,000
Rest of State	15,821,000	34,735,000
Total Texas	421,068,000	417,104,000
Other States	23,157,000	20,401,000
Total United States	510,606,000	477,039,000
Produced by:		
Channel process (pounds)	444,427,000	441,284,000
Other processes *(pounds)	66,179,000	35,755,000
Stocks held by producers December 31 (pounds)	100,497,000	166,159,000
Sales (pounds):		
Domestic:		
To rubber companies	†269,584,000	217,231,000
To ink companies	18,116,000	14,131,000
To paint companies	6,159,000	4,229,000
For miscellaneous purposes	11,503,000	7,883,000
Total	†305,362,000	243,474,000
Exports:		
United Kingdom	†48,381,000	44,429,000
France	†29,914,000	26,217,000
Germany	†27,441,000	23,647,000
Other	†78,517,000	73,675,000
Total	†184,253,000	167,968,000
Losses (pounds)	76,000	‡65,000
Value (at plants) of carbon black produced:		
Total (dollars)	17,389,000	11,486,000
Average per pound (cents)	3.41	2.41
Estimated quantity of natural gas used (M cubic feet)	341,085,000	324,950,000
Average yield per M cubic feet (pounds)	1.50	1.47

* Roller, "special," thermatomic, and Lewis. † Revised. ‡ Gain.



trade took 89 percent, ink companies 6 percent, paint companies 2 percent, and the remaining 3 percent went for miscellaneous purposes. These data indicate chiefly a small increase in the relative importance of sales to rubber companies at the expense of sales for miscellaneous purposes.

The 9 percent decrease in exports of carbon black in 1938 followed increases in each of the three preceding years. The reasons for the decline in 1938 were not entirely clear. But probably the chief reason was a general decline in activity at rubber plants abroad rather than changes in military policy.

Important gains in exports to individual countries were notably few in 1938. The outstanding one was that of about 40 percent over 1937 credited to Italy. The United Kingdom continued as the leading foreign customer, France remained second, and Germany third. Although exports to Germany were lower in 1938 than in 1937, it is doubtful if the decline was related to the production of substitutes, in the opinion of the Bureau of Mines. For the low prices of carbon black in 1938 were not conducive to substitution, even in Germany.

In response to decreased demand, production of carbon black was curtailed to 477,039,000 pounds in 1938 from 510,606,000 pounds in 1937, a reduction of 6.6 percent. However, the production was not cut down in proportion to the decline in demand, and stocks held by producers increased from 100,497,000 pounds on December 31, 1937, to 166,159,000 pounds December 31, 1938.

The decline of output in 1938 was general over the country, although Oklahoma and a few other areas showed increases. Louisiana's production was down 40 percent, but that of Texas was off only 1 percent. Output of the Texas Panhandle declined for the first time since 1932, but an important increase occurred in West Texas.

The Texas production of 417,104,000 pounds in 1938 constituted 87.4 percent of the United States total. It included 382,369,000 pounds in the Panhandle, representing 80.1 percent of the national output, and 34,735,000 pounds in the rest of the state, constituting 7.3 percent of the national total. Louisiana produced 39,534,000 pounds, which represented 8.3 percent of the total for the country; and other states accounted for 20,401,000 pounds, or 4.3 percent of the total.

Reaction to Draw-down Methods of Potential Determination in Kansas Both Favorable and Adverse

By WILLIAM H. STRANG, Staff Writer

THE accompanying article may start an argument, because the "Draw-down Method" of establishing allowables is a controversial question in Kansas now. Our guess is that there will be feelings on both sides.

The article was written not to advocate nor condemn the method, but to present both sides. Some of the statements may be questioned, which is the case of any problem so complicated as the method of taking potentials.

"DRAW-DOWN" methods of potential determination, an interesting innovation in Kansas, may supplant the much-criticized pumping test. Prior to October, 1938, the 8-hour pumping test was specified by conservation regulations as the only permissible method of potential determination. On that date new regulations were adopted, providing, in part, that after hearing before the Corporation Commission pumping tests might be replaced in any pool within the state by another method of finding well productivity. Qualifying clauses stipulated that application for the change must be made by a majority of operators in the pool, and that application must be accompanied by affidavit by two competent persons stating that they had made investigation and found the proposed method to be a sound and workable one.

Producers took immediate advantage of the option thus offered them. On March 1 productivity tests were started on all prorated wells in the state to determine the potentials upon which all allocation of allowable production will be based during the next year. Because of the installation of fluid level and bottom-hole pressure metering methods these pools were exempt from the physical tests: Zenith, Stafford County; South Trapp, Barton County; Bemis, Ellis County; while hearing was pending upon applications from the Schroeder pool, Ellsworth County; Schneider pool, Russell County; the Kraft pool, and the Trapp pool, as operators were preparing application for the South Silica pool. The endorsement of these new methods by several major companies and independent producers, their subsequent use in three large pools, and their imminent adoption in five other pools constitute the first real proposal to change from the unpopular physical test. At recent completion of tests the Bemis pool became the first in the history of the oil industry to employ fluid level measuring methods to fix the potential of all wells.

Neither the physical theories of the new methods nor their use as an agent in the analysis of oil-well productivity characteristics is new. The bottom-hole pressure bomb is well known and its utility needs no explanation. Determining the distance to remote objects by observing the time required for sound to traverse the intervening space is an old practice. Pressure and sound wave fluid level detecting instruments, the others employed, are an outgrowth of this practice and have had the confidence of operators in all parts of the country, particularly California, for a number of years in the solution of production problems. However, the application of these instruments to western Kansas Arbuckle limestone wells making no free gas, many of them making large volumes of water, has created technical and administrative problems of no small significance.

Draw-down Defined

The term "draw-down" refers to the reduction in height of the fluid column standing in the annular space. The footage difference in height of the fluid-level under static (shut-in) conditions, and fluid-level height at a given rate of production is the draw-down for that rate of production. It is reasoned that the fluid column standing in the well is the only force within the well retarding movement of oil into the well bore, and that reduction in height of this column is a function of rate of production and directly proportional thereto. The theoretical maximum production rate must, therefore, be reached when the fluid-level has been drawn down to the top of the productive zone. Draw-down may be regarded either as footage reduction in fluid column height or reduction of bottom-hole pressure in pounds per square inch. It may be regarded as percentage removal of forces retarding productivity in the case of fluid height reduction, or as percentage utilization of forces promoting productivity in the case of bottom-hole pressure reduction. Since both reservoir energy and the balancing fluid column are definite in magnitude at any period in the life of a well, an index to productivity is the result.

Productivity index is defined as the production rate in barrels per day per foot of draw-down, or as barrels production per day per pound differential in bottom-hole pressure. When this factor is found for any well, its multiplication by static (shut-in) fluid-level height, or by static bottom-hole pressure

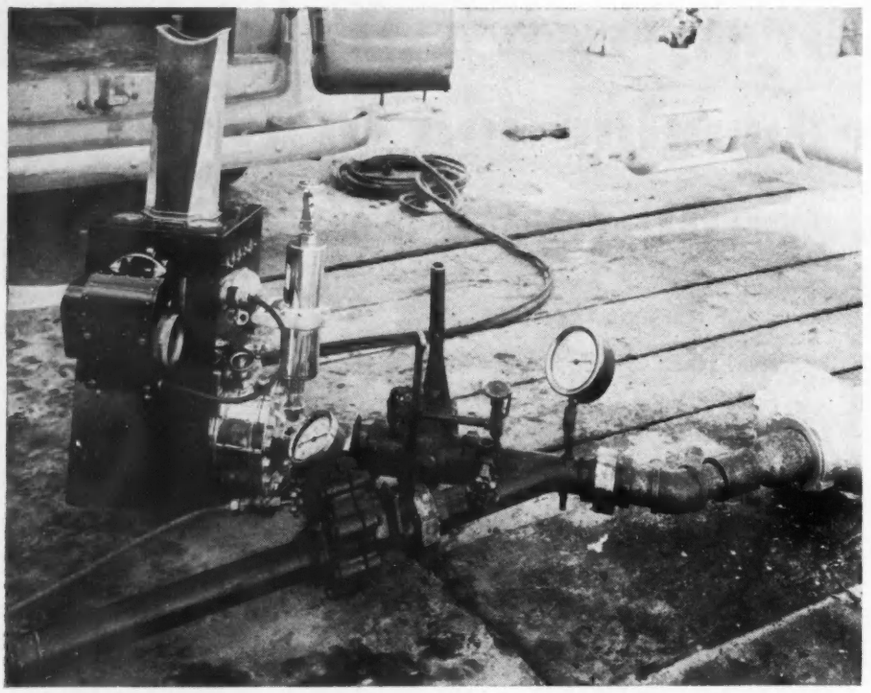


FIGURE 1

The pressure wave type of fluid level measuring instrument now in use in Kansas. Gas released into the casinghead creates a pressure wave which is reflected from tubing collars and fluid level. These reflections are photographed on a moving strip of sensitized paper within the instrument.

if units are consistent, will give a potential for the well.

Fluid-level metering instruments, such as the one shown in Figure 1, are being used for potential determination in the Bemis pool and the South Trapp pool. Two types are available for service upon a well, daily, weekly, or monthly basis. They are essentially alike and are handled in the same manner. The instrument shown in Figure 1 consists of a small impulse gas chamber equipped with a quick-opening valve for suddenly discharging gas into the casing, creating a pressure wave which travels down the annular space and is reflected back from the fluid level. The returning reflection impulses are received on a diaphragm with a low-frequency response which actuates a small mirror reflecting a light beam upon a moving strip of sensitized paper where the impulses are recorded photographically. Figure 2 shows the type of record obtained. The small, numerous pressure wave oscillations are the reflections from tubing collars. Liners or tubing catchers cause ripples of greater amplitude whose position on the chart is compared with the position of the reflector in the well to make and check the velocity calculations. The reflection from the fluid level is sharp and easily identifiable. Comparison of the number of tubing collar reflections with the tubing tally for the well fixes the position of the fluid level in number of joints of tubing down from the casinghead. The small marks in series down the right hand side of the chart are put there by a timer controlled by a tuning fork and driven by a synchronous motor, each small mark being 0.01 of a second, each heavy mark 0.1 sec.

The other instrument, shown in Figure 3, discharges a shotgun cartridge at the well head, creating a sound wave that is reflected in the same manner as the pressure wave. The receiver for this instrument, shown in Figure 4, is based on the principle of the hot wire ammeter; the differential rates of cooling established by the variation in intensity of the returning echoes passing over the wire. The current variations are amplified in the upper left hand cabinet of Figure 3 and transmitted to the right hand cabinet, which contains a direct-writing ink recorder for production of the graph. The lower cabinet in the figure contains storage batteries for power supply.

Initial applications of the impulse gas chamber instruments in

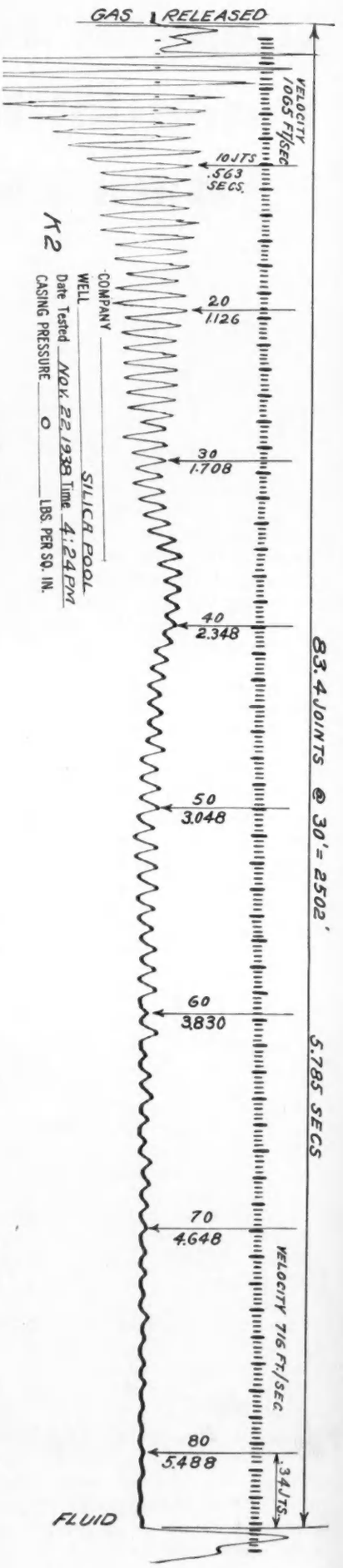


FIGURE 2

A typical test record made in the Silica pool.

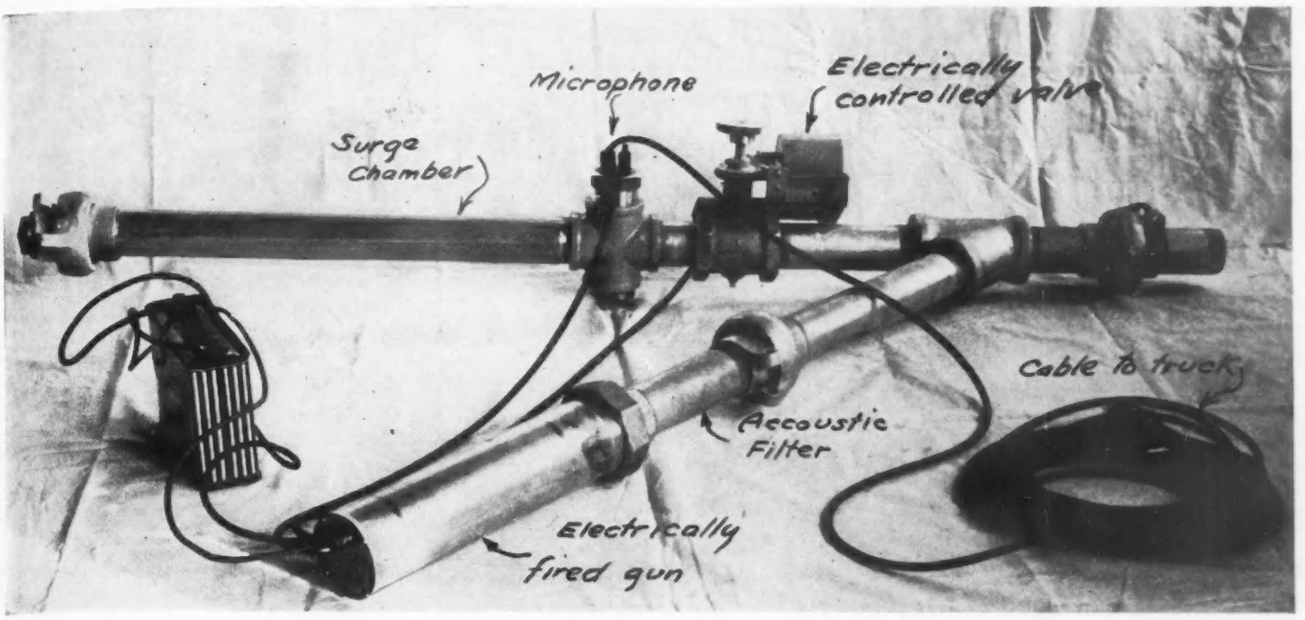


FIGURE 3

The sound wave fluid level measuring instrument shown here creates a sound wave by the discharge of a blank shotgun cartridge at the well head. Returning echoes are amplified and recorded.

Kansas revealed that in the shallow western Kansas oil wells that produced gas along with the liquid the pressure wave used for obtaining echoes from the liquid surface travels at practically a constant rate. Under this condition a velocity which is determined from a limited number of the uppermost tubing collar reflections can be used to compute the distance to the fluid level. In those wells that produce no free gas the rate of evolution of gas from the oil is so slow, even while pumping, that a column of air follows the column of heavy gas in the annulus and the well may operate for several days before producing enough gas to expel all of the air from the casing. While the pressure wave will travel at approximately 1100 feet per second in the part of the well that is filled with air, it slows down abruptly when it strikes the heavy gas at the bottom of the well. A velocity as low as 716 feet per second has been observed 2500 feet from the surface. Velocity varies with density of the medium of transmission, and as a stratified condition exists in the lower part of these wells—a layer of heavy gas resting upon a layer of still heavier gas—it is obvious that calculations of fluid level based on the velocity established in the upper part of the hole will be in error. It is necessary that all joints down to the fluid level have a reflection on the graph if the fluid level is to be accurately measured. Figure 5 has been plotted from the record shown as Figure 6 and shows graphically the wave velocity changes in the well. The straight line extrapolation of the average velocity rate for the first 1200 feet shows a liquid level 460 feet below the actual position.

Normal gas producing wells, unlike those on which the tests have been applied in Kansas, require a determination of the liquid density at each production rate. Casing pressure is built up to depress the fluid a measured distance. The known pressure and distance are used to calculate the fluid density, from which pressures on the pump can be found. The plotting of pressures on pump vs. distances of fluid level from surface will result in a graph similar to Figure 7. The slope of the line plotted in Figure 7 is equal to the fluid density in pounds per square inch per foot of fluid. Numerous tests made upon sand formation wells, where gas is almost invariably present, indicate that higher temperatures toward the bottom of the well accelerate the wave. The increase in velocity here, however, is very slight compared with decrease due to passage through heavy gas in the Kansas wells, as illustrated in Figure 5.

The methods described from here onward, insofar as they refer to

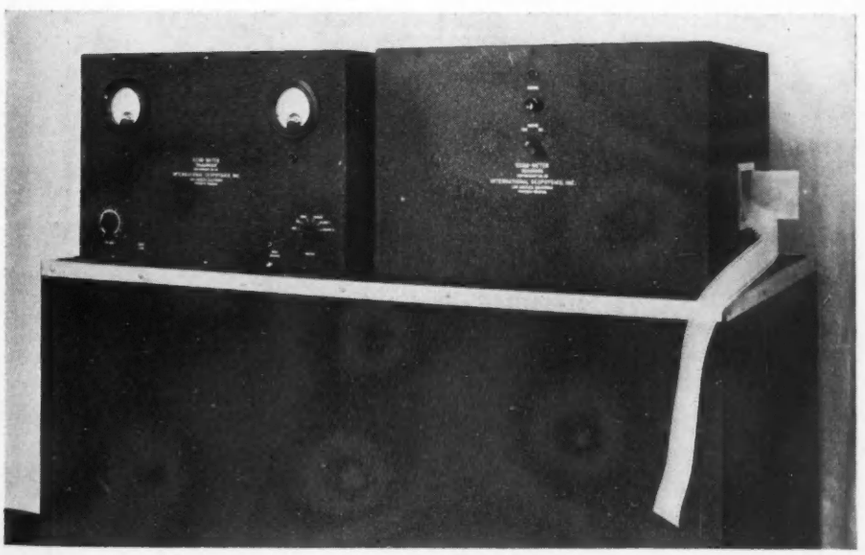


FIGURE 4

This apparatus supplements that shown in Figure 3. Current variations set up in a special microphone by returning echoes are amplified in the cabinet at the left and recorded by direct-writing mechanism in the right-hand cabinet.

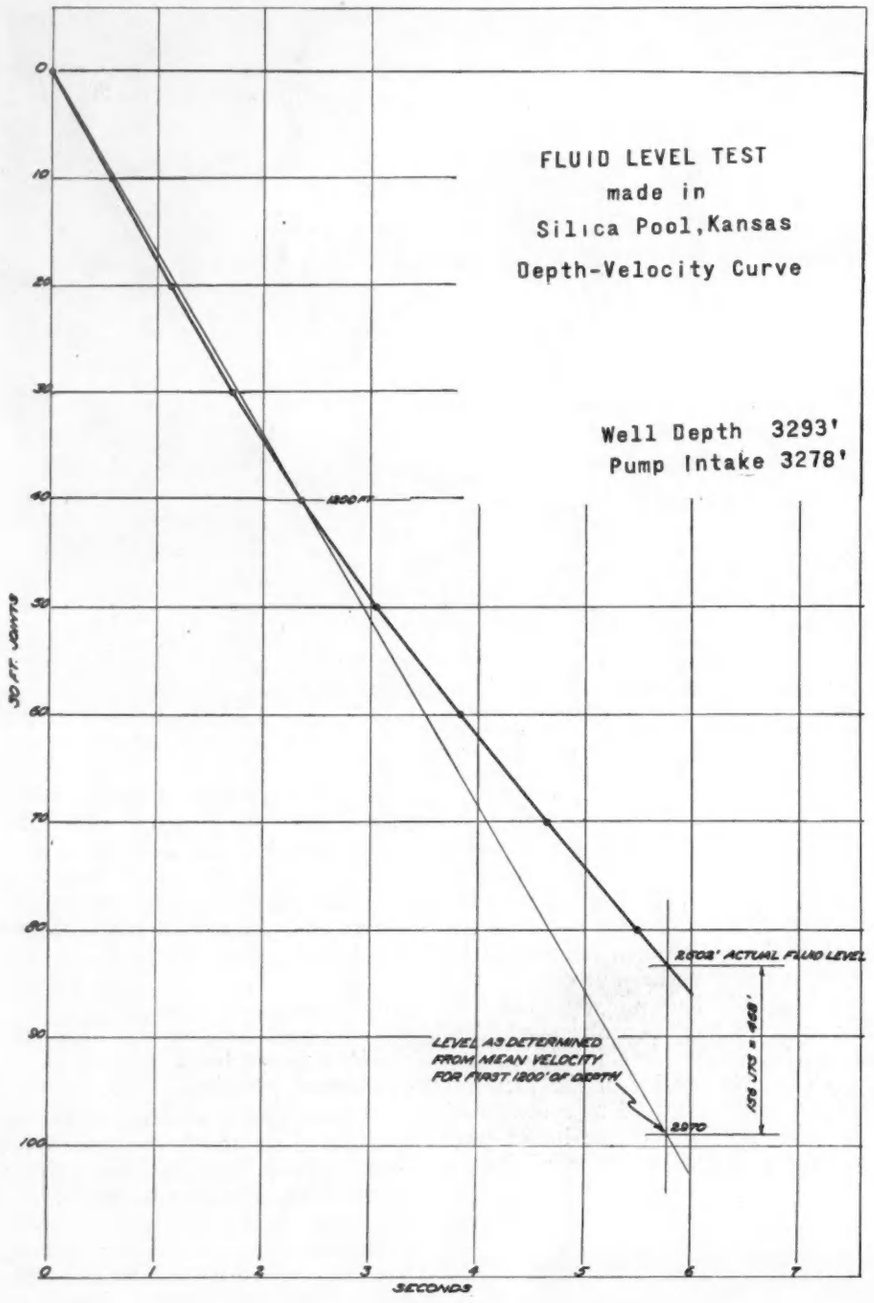


FIGURE 5

Graphic illustration of the effect upon pressure wave velocity of passage through heavy stratified gas near the bottom of the well.

fluid level detection, are used only in areas in which the wells make no free gas. The Arbuckle limestone and dolomite in Kansas is one of the few producing formations that falls in this category.

Modes of Testing

The modes of testing are virtually alike for fluid level metering apparatus and bottom-hole pressure bomb. The well, whether pumping or flowing, is shut in for several hours prior to the test to insure static conditions. Bottom-hole pressure or fluid-level location is then measured. The well is allowed to flow, or pumped, at a certain rate. When the well has stabilized at that rate observations are made on fluid height or bottom-hole pressure. Change is then made to another rate of production, time allowed for stabilization, and new tests made. The plotting of fluid level vs. hourly production rate converted to barrels per day yields a graph similar to Figure 8, for which four tests were taken. The slope of the line conforming to the plotted points is the productivity-index, 4.7, which when multiplied by the static fluid level, 2840 feet, gives an indicated potential of 13,530 barrels of gross fluid per day.

The Kansas State Corporation Commission order for the Bemis pool tests states that "the pumping speed shall be at a production rate sufficient to establish definite points for the extrapolation of a draw-down curve and shall be at least at rates of 5, 10 and 15 percent of the probable well potential or maximum permissible potential, whichever is smaller. The production gauges for each liquid-level determination shall be taken for three hours for the first point, two hours for the second point, and one hour for the third point, each after reaching equilibrium." The one hour gauging period, admittedly too short, was specified to reduce the total fluid production to a quantity less than the monthly allowable for the well. Experience in the Bemis pool indicated that in cases where the delivery of fluid from the lead line to the tank was intermittent and unsteady the one hour gauging period was too short to produce accurate results.

The low per-well allowable in Kansas has been a hampering factor as it is necessary to allow the well to stabilize at the test production rate, sometimes a matter of

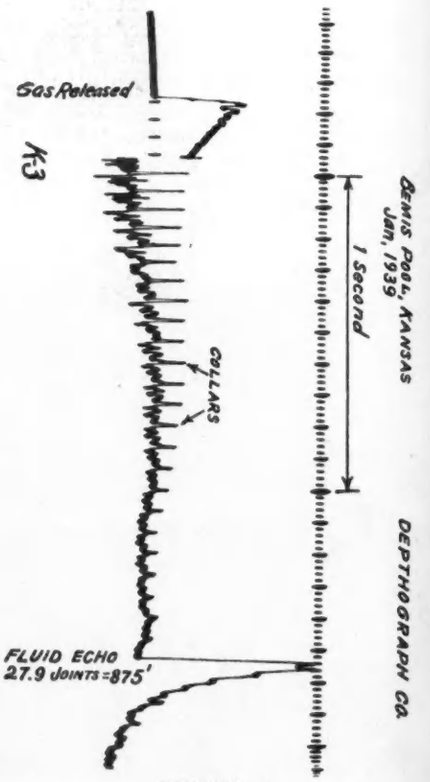


FIGURE 6

Type of chart used on wells in which the fluid level is within 1500 feet of the surface. Fractions of joints can be read quite accurately.

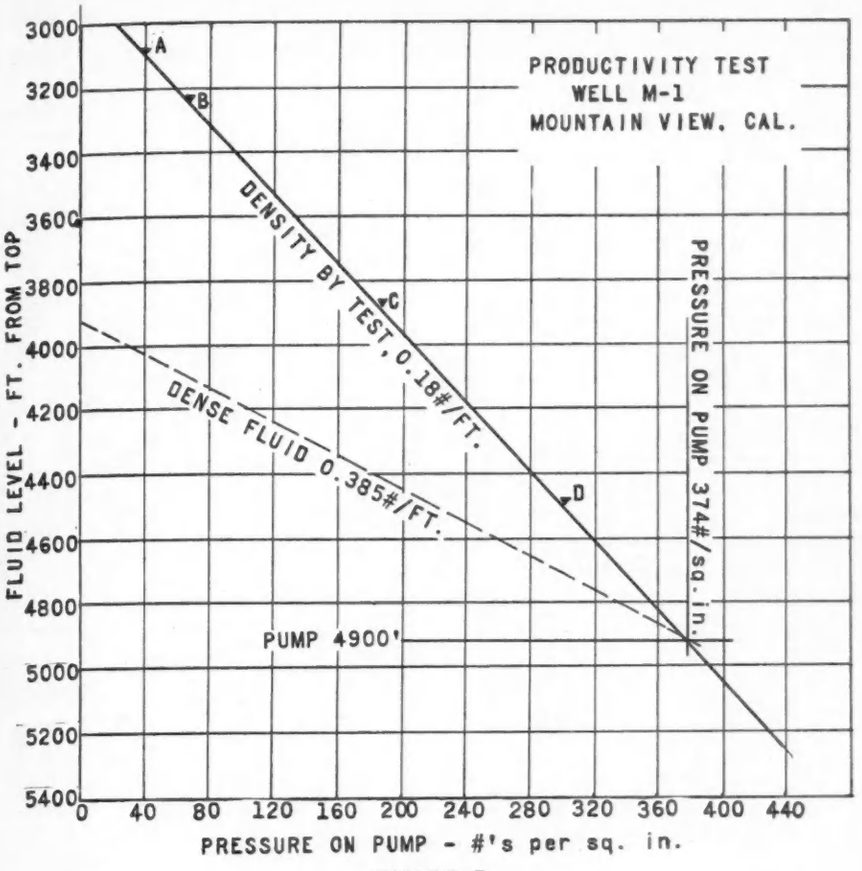


FIGURE 7

Unlike Western Kansas Arbuckle wells, those making free gas require a determination of fluid density at each production rate. Graph shows pressure on pump at indicated potential rate.

24 hours for the smaller wells, take the test and reduce the production rate immediately to avoid over-running the entire month's allowable. This condition necessitates two or more tests at each rate of production to ascertain if the well is stable, while in areas in which over-production is not a factor, California for instance, it is possible to allow the well to produce much longer than is necessary for stabilization and only one test is then applied for each rate. In certain instances in Kansas well productivity has been apparently so high that low allowables and absence of tank room would permit only draw downs of 2 or 3 percent, so small that data plotted from the tests gave erratic and questionable results.

Another complicating condition has been the almost entire absence in Kansas wells of markers such as tubing catchers or liner tops. Wave velocity must be determined entirely from tubing collar reflections. Upset-ended tubing supplies a reflection from its collars almost twice as strong as that from plain-ended tubing. Plain tubing strings, when the fluid level is low, require much more time to adjust the instruments to obtain reflections from any great depth. If fluid level measurement practices attain the general use their rapid acceptance presages then well completion standards could be varied to advantage by running upset-ended tubing, and, in the absence of tubing catchers, installing a simple baffle at a known depth in the well to act as a major reflector.

Figure 6 illustrates the type of chart used with the pressure-wave instrument where the fluid level is not more than 1500 feet from the surface. A chart of this type, where the collar reflections reproduce as sharp lines, permits reading fractions of joints more accurately than the type shown in Figure 2 which is used for deeper determinations, where accuracy in counting to the fraction of a joint is not so essential. The liquid level in the well from which the chart in Figure 6 was made stood 15 joints down before the pump was started. When the chart was made the pump had been operating for 7 hours and inspection of the chart will reveal that a distinct change in the pressure wave velocity occurred about 18 joints up from the fluid surface, indicating that in this time of 7 hours the column of gas in the well had increased only about 3 joints in length.

As a preliminary to the adoption of the draw-down method in one Kansas pool a number of tests were run to establish the fact that the amount of draw-down was directly proportional to the rate of production, a fact that many engineers were inclined to dispute. Figure 9 shows a graph plotted from data obtained on a well producing 50 percent water. Other tests revealed a similar straight line relationship, with certain small variations probably attributable to the short gauging time. To operate the wells until the liquid levels were perfectly static would have taken an excessive amount of time. The levels were considered sufficiently stable when the variation in level, as shown by measurements taken not less than 1 hour apart, did not exceed 5 feet per hour. This rule was applied up to a draw-down of 500 feet from the average field static level, and for greater amounts of draw-down the level was considered sufficiently stable when it did not vary more than 1 percent of the draw-down from the average field static per hour. The maintenance of a constant pump speed during the tests was about as important as measuring the liquid level. It was, therefore, checked for each liquid-level measurement.

An obstacle was encountered in the fact that water production is not constant at all rates of production. The knowledge that slow production rates were conducive to low water-oil ratios dispelled any certainty that the proportion of water produced at the indicated potential rate was the same as that observed at the production rates at which the test was applied. Suggestions have been made to correct for this condition, among them that centrifuge tests be run on samples taken from the lead line at the production rates and a curve plotted on water-oil ratio at each rate vs. rates of production and extended to indicate the expected water-oil ratio at the calculated maximum productive capacity. Total water produced at this rate could then be subtracted from the gross fluid potential indicated by productivity-index calculation.

Potentials indicated by productivity-index calculations have been both closely comparable to pump-

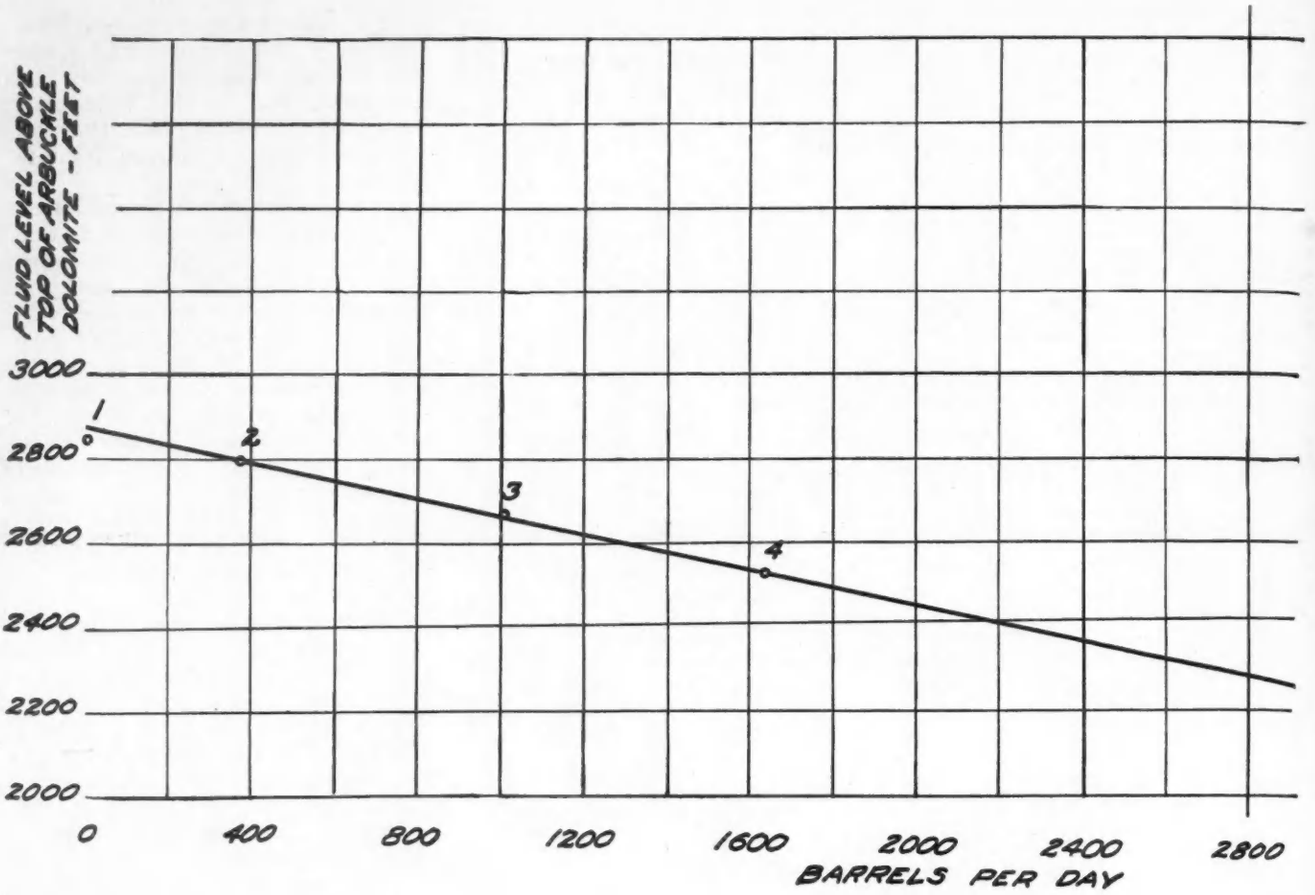


FIGURE 8

Graphic representation of a productivity test on a well in the Trapp pool. Fluid level plotted against production yields a line whose slope is the productivity index. Data for this test, shown below, is representative of the observations made during fluid level measurement.

Test Point No.	Total hours pumping	Duration of Test-Hours	Production rate during test Bbl. per day	Strokes per minute
1	Static	21	0	0
2	16	4	370	20
3	14	4	1008	20
4	17	4	1638	29.2

Productivity index 4.7 barrels per day per foot draw-down. Well potential 13,530 barrels per day.

ing test results and inordinately high. Some of these results, classified by those opposed to the method as "outlandish," have set potentials as high as 100,000 barrels. Cases of 50,000 barrel calculated potentials are not uncommon, and a number range from 10,000 to 15,000 barrels, while heretofore a pumping test potential of 3500 barrels was noteworthy in the state. The reason for this radical departure from convention is a matter for conjecture. It has been noted that draw-down methods usually yield a potential not remarkably higher than that of a previous pumping test for the smaller wells. Some familiar with the subject attribute the divergence at this point to the cumulative error effect of reading results from far to the left on an extrapolated productivity-index curve, others believe the difficulty lies in the inability to get accurate information on water production at the indicated potential rate. Whatever the causes, be they those mentioned or errors in gauging, stabilization, or untraceable distortions of the echoing pressure or sound wave, it has been necessary to set an arbitrary top limit, from 3000 to 5000 barrels, on potentials obtained by the procedures in question. Under such an arrangement 40 out of a certain 43 wells in the Bemis pool had their potentials raised to the top limit of 3500 barrels, and the pool allowable was increased by 1500 barrels daily when the new "modified" potentials became effective.

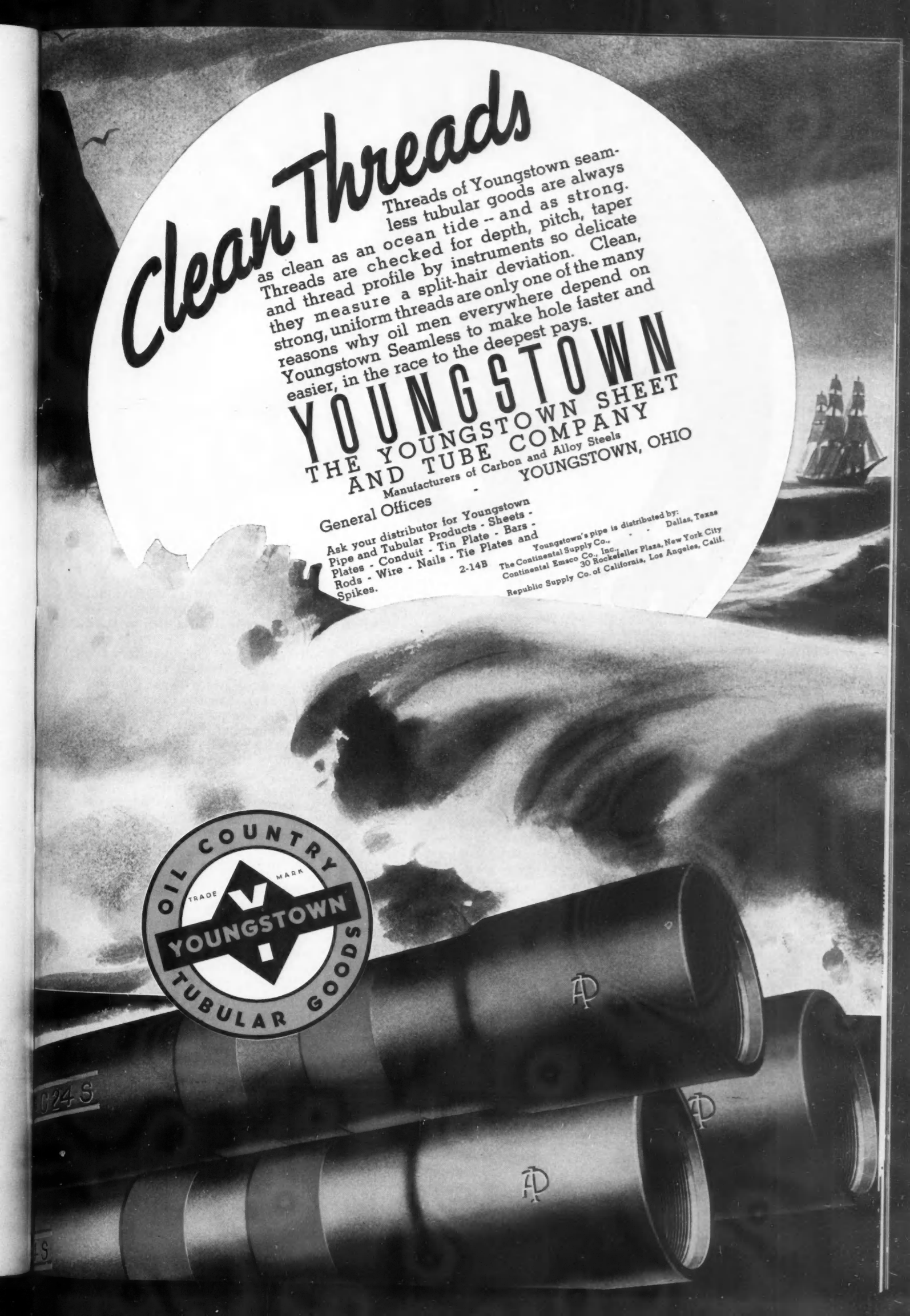
Potentials of two thirds of the wells in the Bemis pool were taken with the sound wave instrument, one third of the wells with the pressure-wave instrument, and two wells were tested with bottom-hole pressure bomb. Pool potential was increased from 435,000 barrels for 218 wells to an estimated 635,721 barrels for 221 wells. Average potential, at 2000 barrels per well originally, climbed to 3046 barrels per well for the first 199 wells tested. Substantial though this increase may be, it reveals that the gross errors which resulted in 100,000 barrel potentials for some wells when the methods were first applied are of no effect under the top-limit system.

Potentials taken with bottom-hole pressure bomb have frequently been regarded as erratic. Calibration of the bombs is made with the greatest of care, but even then the working accuracy range of the instrument constitutes a large per-

TABLE 1

Physical Tests in the Zenith Field

Well	Potential by Physical Test	Potential by Bottom-hole Pressure Bomb
E. H. Moore, Haver 1	3223	6418
Haver 2	4111	14,298
Haver 3	1688	3126
Haver 4	1745	41,616
Pure Oil Co.,		
O'Brien 5	1965	2295
O'Brien 6	1439	1834
O'Brien 7	1322	2222
Others	1008	1071
	2009	54,138
	2626	4212
	3413	10,943
	773	1234


Clean Threads
Threads of Youngstown seamless tubular goods are always as clean as an ocean tide -- and as strong. Threads are checked for depth, pitch, taper and thread profile by instruments so delicate they measure a split-hair deviation. Clean, strong, uniform threads are only one of the many reasons why oil men everywhere depend on Youngstown Seamless to make hole faster and easier, in the race to the deepest pays.
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Youngstown's pipe is distributed by:
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Republic Supply Co. of California, Los Angeles, Calif.
OIL COUNTRY
TRADE MARK
YOUNGSTOWN
TUBULAR GOODS
C24S

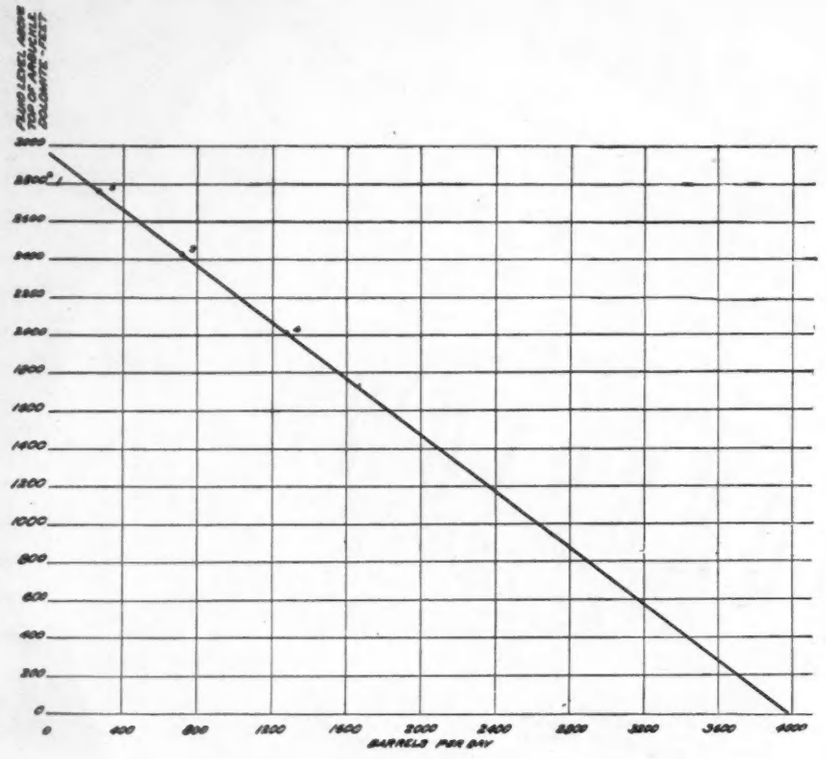

FIGURE 9

Actual tests, such as the one in the Trapp pool plotted above, have established the heretofore disputed truth that draw-down is proportional to production.

centage of the pressure differential in reservoirs of normal permeability, and it may well be that the accuracy inherent in this instrument is not sufficient to meet the demand upon it in this type of work. A comparison of physical tests made upon some of the wells in the Zenith pool with those made by bottom-hole pressure bomb is shown in Table 1. It must be noted that many of the physical tests were taken through casing, while flow during pressure tests was through 3-inch tubing, so that a definite relationship, assuming that one does exist, would not be expected to appear here.

The 8-hour pumping test, with its concomitants of waste, premature water intrusion, and advantages to the operator whose purse can stand the outlay for excessively powerful installations, has long been under fire in Kansas. A great many operators have taken the new methods to their bosom, maintaining that with whatever faults they may have they are still a welcome and worthy replacement of the physical tests. As stated, draw-down methods are now official in three of the larger pools of the state and are being advanced for five others. Depending upon their success in pools where they are now in use there will probably be a rapid spread to still other pools within the state.

Despite the saving in equipment costs and reservoir energy, and the official sanction granted productivity-index methods, many Kansas operators take an adverse position, claiming that the inability of the methods to furnish accurate information upon water production at the potential rate, and the lack of a correlative factor to establish parity in allocation between pools having calculated potentials and those having pumped potentials disqualify the whole system as an equitable method of fixing the values upon which the whole proration system is based. These observers generally concede the merit of test records as an insight to well performance, and generally accept the draw-down theory, but point out that in a state where well potential is almost the sole basis of allocation (acreage factors are applied directly in only a few pools, and indirectly and in a minimized manner to most pools through the Composite Withdrawal Potential Decline Curve) it is arbitrary and flagrantly unjust to permit some operators to benefit by potentials whose relation to actual productive capacity has yet to be established by long-time experience. These operators, admitting the folly of expensive, powerful equipment to obtain a high potential when ensuing allowables can be lifted with light, inexpensive installations, prefer these familiar evils "and fly not to the evils they know not of."

Proponents of these methods insist that correlation between a modified potential and a previous physical test result upon the same well or upon offset wells is not necessary, nor is correlation between potentials in a pool or pools in which the still general pumping test is in effect. They maintain that the failure to reflect true productive capacity lies with the pumping test rather than the calculated potential, since potentials taken with beam pumping equipment are limited first by the power and efficiency of the installation itself, and not by any characteristic of the well or the reservoir. To substantiate their views they point to tests such as one conducted in the Bemis pool by Magnolia Petroleum Company, which had installed a bottom-hole pressure bomb on one well, and as it was operated at three rates of production took simultaneous readings with both pressure and sound wave fluid level meters. The results: by bottom-hole bomb, 2915 barrels per day, by one fluid level meter, 2883 barrels, and by the other, 2967 barrels.

The controversy rages. It is certain that the practice of pumping or flowing a limestone reservoir at high rates for an extended period is not in keeping with the principles of proration that it is supposed to serve. Any procedure that can replace that practice is to be welcomed as a distinct improvement, both in production practice and proration principle.

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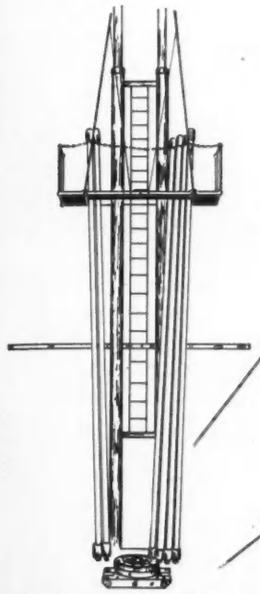
Draw works — depends on model engine used. Slush pump unit — depends on pump engine used.



FRONT VIEW OF MAST SHOWING SAND REEL PIPE RACKED

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10 — Anchored End of Drilling Line
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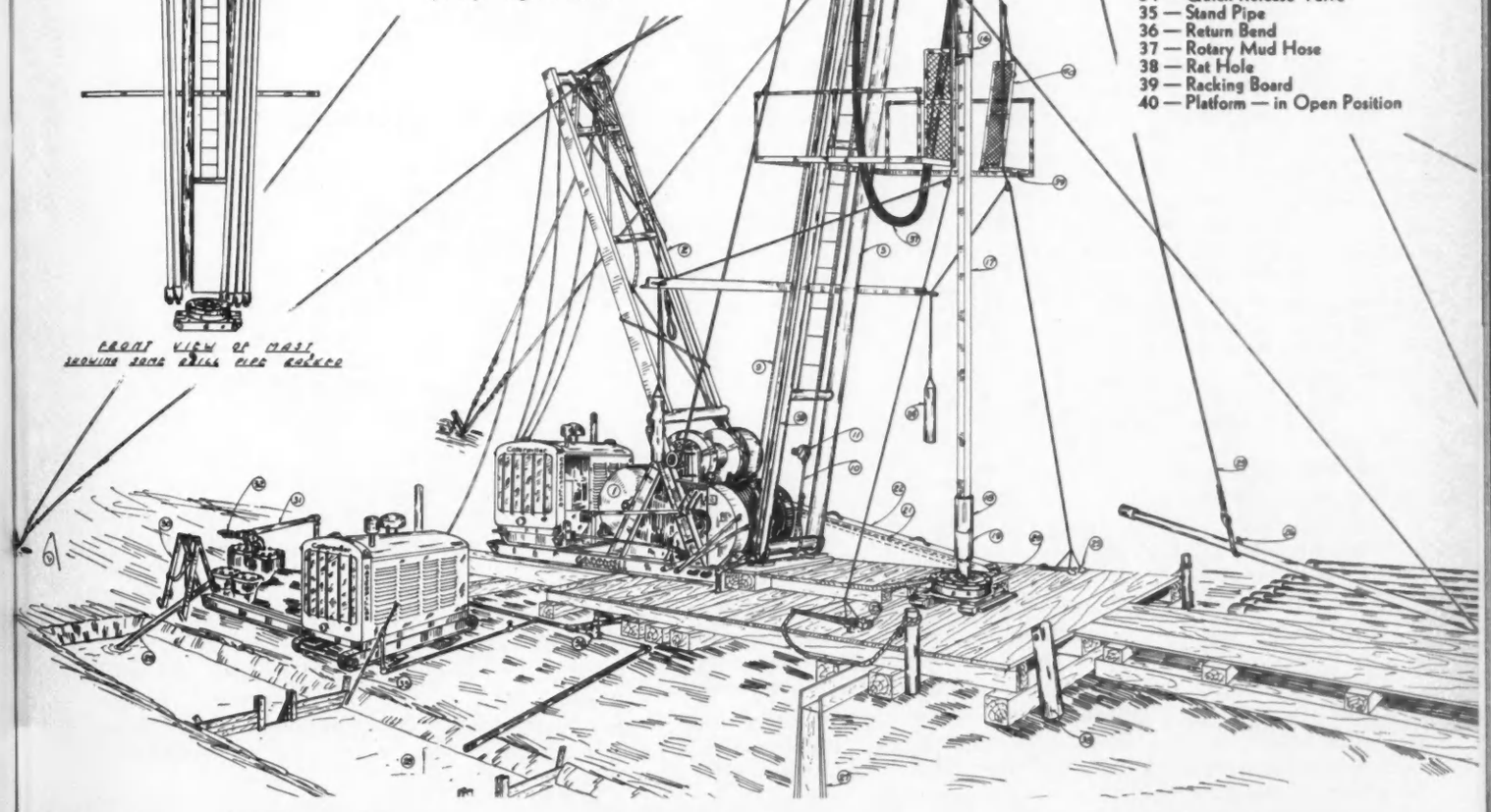
12 — Traveling Block
13 — Hook
14 — Drill Pipe Elevator
15 — Swivel
16 — Upper Drill Stem Coupling
17 — Drill Stem
18 — Lower Drill Stem Coupling
19 — Tool Joint on Drill Pipe
20 — Rotary Table
21 — Rotary Table Drive Chain
22 — Rotary Drive Chain Shield
23 — Drill Pipe Tong Wrenches
24 — Tong Wrench Counter Weights
25 — Cat-Line
26 — Cat-Line Hook
27 — Mud Trough
28 — Slush Pit
29 — Mud Pump Suction
30 — Suction Hoist
31 — Mud Pump Discharge
32 — Relief Valve
33 — Mud Jet
34 — Quick Release Valve
35 — Stand Pipe
36 — Return Bend
37 — Rotary Mud Hose
38 — Rat Hole
39 — Racking Board
40 — Platform — in Open Position



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Selective Exclusion of Fluids from Wells

By PAUL D. TORREY,
The Sloan and Zook Company, Houston, Texas

PART III

VI. Application of Special Cementing Methods to the Testing of Deep Wildcat Wells, and to the Completion of Wells Producing from a Series of Oil Sands

VARIOUS cementing methods which are deserving of attention have been developed for the testing and final completion of deep wildcat wells, and for wells in which completions must be made in a thick series of productive sands. One of the problems that frequently confronts an operator is the decision as to whether he would be justified in running casing to test a formation that may not have ben cored but which the electrical log suggests might be productive. A unique method for handling a problem of this nature, without the running of a full-length string of casing until the productivity of a particular horizon has been ascertained, has been employed successfully on a few wildcat wells in southern Louisiana. The method that is used best can be described by giving the case history of a wildcat well drilled in the Gueydan area of Vermilion Parish, Louisiana. This well had been drilled according to the following schedule:

13⅜-inch casing cemented at 3084 feet.
12¼-inch hole drilled from 3084 to 7692 feet.
9⅞-inch rathole carried from 7692 to the total depth of 9116 feet.

The electrical record showed a minor resistivity prominence opposite a shaly sand between the depths of 7140 and 7161 feet. After the total depth had been reached, it was decided that this sand should be tested before final abandonment of the well. The well was plugged back to 7150 feet, and three unsuccessful drill-stem tests were made with dual straight-hole packers. The plug was drilled out to 7200 feet, and a liner of 9⅝-inch casing was cemented from 6790 to 7200 feet, leaving open hole from the 13⅜-inch surface casing at 3084 to 6790 feet. The plug was drilled out to 7150 feet, and the casing perforated from 7140 to 7150 feet with 50 holes. A 15-minute drill-stem test of this interval, using a wall packer, resulted in the recovery of 900 feet of mud and distillate, of which the latter comprised approximately 25 percent.

As a result of this test, 7-inch casing was set and cemented at 7130 feet. The plug was drilled out to 7183 feet, and the casing perforated from 7140 to 7150 feet with 40 holes. In completing the well, 2½-inch tubing was swung at 7097 feet, and the well completed through open perforations and without screen for an initial production of 75 barrels of distillate and 2300 m.c.f. of gas per day through a ¼-inch choke.

It can be seen that the results of the drill-stem test through perforations were conclusive insofar as the contents of the sand were concerned. No difficulties were encountered in making the test; and a considerable saving would have been effected, over the cost of setting a full string of casing, had the sand been water-bearing.

If cores of the sands encountered in the drilling of a wildcat well are indicative of oil-saturated formations, or if electrical logs are suggestive of the same condition, it is becoming very general practice to run casing and progressively test the favorable horizons from the bottom of the hole upward. After the casing has been cemented, a bridge plug is set in the pipe below the lowest possible producing formation. The pipe then is gun-perforated at the point desired, and drill-stem tests then can be made. Should the particular formation tested be productive, the well then can be completed in the normal manner; if it should prove to be barren of oil, cement can be squeezed through the perforations, and tests of similar type made successively in higher formations. The cement retainer is used widely for this purpose, a retainer being set first as a bridge plug in the casing below the formation to be tested. If this formation proves to be unproductive, a retainer then is set above the perforations, and cement slurry is forced through the perforations back of the pipe. After the cementing job for which the retainer thus is used has been completed, it may be converted into a bridge plug by dropping a bridging ball, and the next test in a higher formation may be commenced immediately.

Frequently a series of perforations and squeezes is required in the same formation to shut off water or reduce gas volume in order that a proper well completion may be effected. Perforations usually are shot through the casing first into the lower section of the formation to be tested. If water results, cement slurry is squeezed through the perforations and allowed to set. Another set of perforations is made a little higher up, and the well again tested. This procedure is continued until the maximum amount of oil has been obtained. A striking example of the re-

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Part 1 of this paper, which was presented at the Mid-Year Meeting of the American Petroleum Institute at New Orleans, appeared on page 26 of the issue of May 22. Part 2 appeared on page 36 of the May 29 issue, and Part 4 will appear next week.

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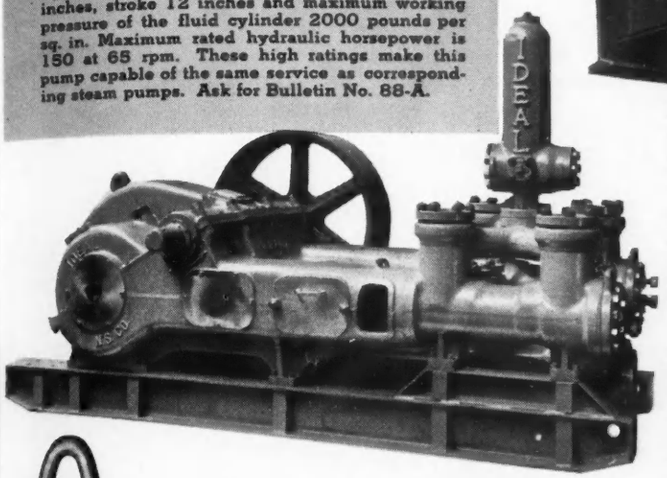

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These swivels follow a basic design which has been proven through many years of field service. Type GS is built in 4" and 6" sizes, Type GSB in 4" only. Both types are recommended for service in shallow or moderate drilling areas. Ask for Bulletins No. 155 and No. 214.

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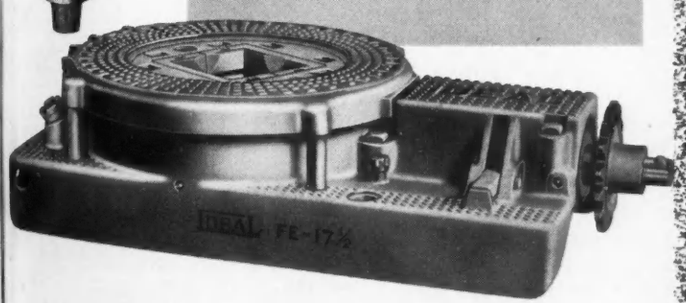
A fully enclosed oil bath type rotary machine for drilling up to 5000 feet with 4½ inch drill pipe. Its advanced features and ability to operate at higher speeds give it a broad service range for shallow as well as medium depths. The table opening is 17½ inches and net weight less table guard is 6759 pounds. Complete information is available in Bulletin No. 210.



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A narrower and shorter streamlined block which saves head room in the derrick and operates safely at the highest speeds. It is of the three sheave type and has a rated capacity of 60 tons. Over-all width is 16⅞ inches due to elimination of spacers, and length is 55¾ inches. Its new and improved features are described in Bulletin No. 242.

THE IDEAL TYPE D-6 ROTARY HOOK

A hook designed especially for light rotary drilling requirements. It is narrow and streamlined in construction and the spring and locking mechanisms are completely enclosed. The hook member is of the closed link design and is automatically closed and locked in position when the swivel bail is engaged. Other features include a device that locks the hook in multiple positions. For further description ask for Bulletin No. 243.

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sults that may be obtained, by successive perforating and squeezing, from a well which, under ordinary circumstances, might have been abandoned as a dry hole is given in the following completion record of a semi-wildcat located in the South Gibson field, Terrebonne Parish, Louisiana:

Five-inch casing was set at 9178 feet, and cemented with 728 sacks. The well then was plugged back to 8905 feet, and the casing perforated with 20 holes between 8880 and 8885 feet. Drill-stem test recovered salt water with a show of oil. Seventy-five sacks of cement were squeezed into the formation at 2500 pounds pressure after the hole had been washed out clean. The casing was tested with 1500 pounds mud pressure, and the pressure dropped to 1000 pounds in 2 minutes. Seventy-five sacks of cement then were squeezed through the same perforations at a pressure of 3800 pounds. The casing again was tested with 1500 pounds mud pressure, and the pressure dropped to 1100 pounds in 30 minutes. The casing then was re-perforated between 8880 and 8883 feet, and a drill-stem test recovered two stands of shaly mud. The casing again was re-perforated between 8883 and 8885 feet with 8 holes, and a drill-stem test recovered 150 feet of oily mud. Again the casing was re-perforated from 8885 to 8888 feet with 12 holes, and a drill-stem test recovered 2 stands of viscous mud. Twelve additional holes then were shot between 8883 and 8888 feet, and the well was acidized with 500 gallons of 15 percent hydrochloric acid. A drill-stem test then recovered oil and salt water.

The well was completed with an initial production of 57 barrels of oil, 423 barrels of water, and 26,000,000 cubic feet of gas per day, with a tubing pressure of 400 pounds and a casing pressure of 1135 pounds, through a 10/64-inch choke. The well then was killed, and the casing perforated between 8895 and 8900 feet with 10 shots. Fifty sacks of cement was squeezed through these perforations. The cement returned at 8893 feet. A drill-stem test recovered rathole mud. The casing again was re-perforated from 8883 to 8887 feet with 8 holes, and 25 barrels of gallic acid were squeezed through the perforations. A drill-stem test recovered oil and salt water. On production test, the well made 57 barrels of oil, 423 barrels of salt water, and 28,000,000 cubic feet of gas, with tubing pressure of 400 pounds and casing pressure of 820 pounds through a ½-inch choke. After 4 months' time the production was 165 barrels of oil, 1815 barrels of water, and 768,000,000 cubic feet of gas per day through an 11/64-inch choke.

It may be concluded, from the series of tests made on this well, that repeated squeezing through the perforations opposite the oil sand had closed the perforations to the point that a flow-back of fluid into the well could not be established. This condition was remedied by treating with hydrochloric acid and gallic acid. The sand in this well had a very thin oil section, with a gas cap above and salt water below. Both the gas and water greatly increased after four months of production, but it is believed that this condition resulted from the extremely thin oil pay. The accumulative oil production from the well is 18,277 barrels, and it continues to flow at a profitable rate.

In fields such as the North Dome of Kettleman Hills in California, production is found in a series of sands which may extend for a vertical distance of many hundred feet. These sands are separated by shale breaks of various thicknesses, and usually there are certain water-bearing beds within the series which must be cemented off to prevent emulsions, and to protect the oil sands from damage that might result from water penetration into them. In order to utilize only one string of casing and at the same time produce oil from the various separated sands, a method known as "series cementing" is employed.

In order to complete wells of this type properly, an accurate record of the position and thickness of the oil- and water-bearing strata must be kept. The string of pipe is made up with perforated sections to correspond to the thickness of the oil sands, and with blank pipe to correspond to the water-bearing sands and shale breaks—cement collars being provided in the blank pipe to permit the passage of the cement. A solid cement baffle is placed at the bottom of the lowest blank section of pipe, and a metal petal basket at the bottom of higher blank sections of pipe, in order to prevent the cement from mixing with the mud and to insure that the cement will be placed at the point desired.

Cementing is commenced by setting the cement baffle at the bottom of the lowest blank section and dumping a few sacks of cement on top of it. A cement retainer then is set above the cement collar and circulation established down the tubing, on which the retainer is run, through the retainer and up behind the blank pipe. A predetermined amount of cement slurry then is pumped through the retainer, and out through the cement collar behind the pipe. Pressure is maintained on the cement by the back-pressure valve on the retainer so that no cement will come back into the casing after it has passed the valve. After the cement has been run, the tubing may be unscrewed from the retainer, and, after having been flushed out, pulled from the hole. Without delay a cement retainer to serve as a bridge plug then is placed at the bottom of the next highest section of blank pipe, and the same procedure repeated until the entire series of blank sections is cemented. After the cement has had an opportunity to set, the plugs are drilled out and the water shut-off tests are made from the top down—the reverse of the cementing procedure.

It will be apparent from the preceding discussion that special cementing methods are of great importance in the successful testing and completion of wells, and as such their use has contributed much to the efficiency of production practice.

VII. Squeeze Cementing to Reduce High Gas/Oil Ratios

Detailed treatment of the methods discussed previously now will permit consideration of results obtained by application of these methods without constantly reviewing the reasons for their employment. Out of the numerous case histories that have been assembled and studied, it is proposed to select particular operations from various fields which will serve best to illustrate the matters most deserving of emphasis.

Amelia Field, Jefferson County, Texas

The Amelia field has afforded a very important test for squeeze cementing due to the thin section of oil pay and the proximity to it of an overlying gas pay—the two sands being separated by a very thin shale break. Before the field had been developed and sand conditions had been established, it was the custom to set casing on the top of the oil pay and then drill the oil pay through the casing. A liner then was set through the oil pay, and after the well had been brought in—provided the gas/oil ratio proved to be excessive—a squeeze job would be attempted through the liner. As development in the field improved, it became the practice to squeeze off the gas pay before the completion of the well.

As an example of the first method of completion, the record of the following well is presented.

This well was drilled to a total depth of 6777 feet, the

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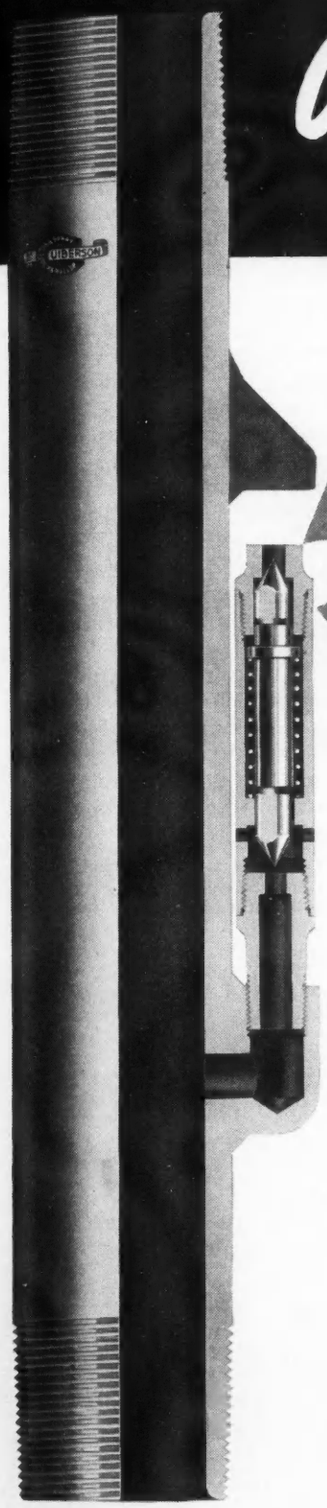

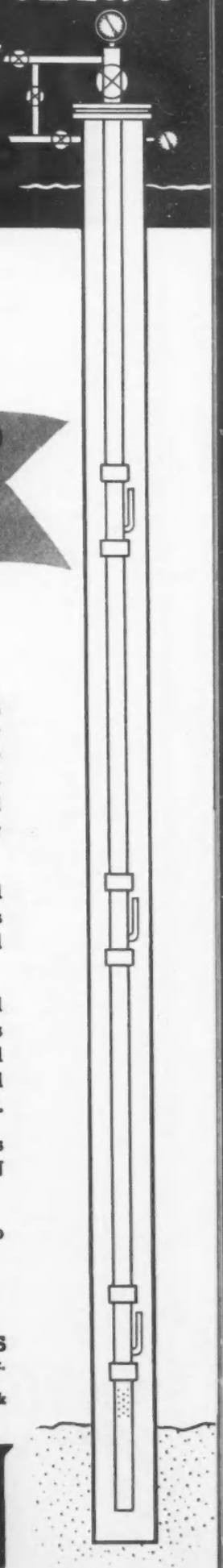

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oil sand being found from 6773 to 6777 feet, having a total thickness of only 4 feet. Five-and-one-half-inch casing was set and cemented at the top of the oil pay at 6773 feet, and the well was brought in with an initial production of 96 barrels of oil per day and a gas/oil ratio of 6507 to 1. In order to reduce the gas/oil ratio, the well was killed; a cement retainer was set at 6770 feet, to act as a bridge plug; and the casing perforated between 6765 and 6769 feet with 6 shots. A cement retainer then was run in on tubing and set at 6761 feet. Eighteen barrels of water then were pumped in to break down the formation. The initial break-down pressure was 2700 pounds per square inch, and the final water pressure was 1800 pounds per square inch. Seventy-five sacks of ordinary cement were pumped down the tubing, of which approximately 17 sacks were squeezed through the perforations, the remainder being flushed out through the circulation joint. A slurry weight of 15 pounds per gallon was used, and a maximum squeeze pressure of 3500 pounds per square inch attained. The cement was allowed to set for 36 hours, and after the retainer and bridge plug had been drilled out, the well was re-completed with a production of 114 barrels of oil per day, and a gas/oil ratio of 346 to 1. The procedure employed on this well is shown in Figure 4.

As an example of the second type of completion, where sand conditions are already known, the record of the following well is presented.

This well was drilled to a total depth of 6776 feet, and 5½-inch casing set and cemented at 6773 feet. The oil pay extended from 6769 to 6776 feet, and was separated from the overlying gas pay by 2 feet of shale. After the cement had set, the plug was drilled out down to a point opposite to the shale break. The casing then was gun-perforated with 6 holes between 6760 and 6764 feet. A cement retainer was run in on the tubing and set at 6759 feet. Ten barrels of water were pumped in to break down the formation, the initial water pressure being 2500 pounds per square inch, and the final water pressure 1800 pounds per square inch. The water then was followed by 75 sacks of 15-pounds-per-gallon slurry, of which about 43 sacks were squeezed through the perforations with a maximum squeeze pressure of 3400 pounds per square inch. The remaining cement in the tubing was flushed out through the circulation joint, and the cement allowed to set for 48 hours. After the retainer and cement plug had been drilled out, the well was completed with a production of 656 barrels of oil per day, with a gas/oil ratio of 466 to 1. The method employed in this well is shown in Figure 5.

The general results of squeeze cementing for the reduction of high gas/oil ratios in the Amelia field, on the whole, have been very good. Careful coring and the use of electrical logs have been most helpful in setting the retainer and in perforating at the proper points to give the best results. The effects of the squeeze jobs appear to be fairly permanent, and undoubtedly they have been responsible for the efficient production of oil from a very thin oil-pay section. The most satisfactory results have been obtained in areas where the maximum squeeze pressure exceeds the initial break-down pressure, and apparently the cement slurry sets selectively against the gas pay without affecting the oil pay. The presence of a shale break between the gas pay and the oil pay undoubtedly has contributed much to the success of squeeze cementing in this field.

Cayuga Field, Anderson County, Texas

This field has been troubled particularly by high gas/oil ratios, which have been reduced very successfully by squeeze cementing. In one well the comparison is shown easily. The casing first was set at 4080 feet and the well completed, making 10,000 m.c.f. of gas and no oil. The pipe then was cut off above the cement, a whipstock set; and after a side-tracked hole had been drilled, casing was set at 4083 feet with perforations at from 4079 to 4080 feet. After drilling the plug, the well came in making 95 barrels of oil per day, with a gas/oil ratio of 380 to 1. In another well casing was set at 3768 feet, and the well brought in making 15,000 m.c.f. of gas per day and no oil. A liner was set through the pay; and after having been cemented, was gun-perforated with 9 shots at a depth of approximately 3870 feet. A cement retainer was set at 3860 feet, and some 30 sacks of cement squeezed through the perforations. After the retainer and cement plug had been drilled out, the well was brought in making 45 barrels of oil per day, with a gas/oil ratio of approximately 500 to 1. Based upon results of this nature, it is now general practice in this field to set the pipe entirely through the pay section and then perforate only the lower part as the original completion.

Fairbanks Field, Harris County, Texas

The Fairbanks field has been troubled with very high gas/oil ratios; and, in fact, some of the wells, when originally completed, produce gas entirely and no oil. The oil pay has an average thickness of about 20 feet, and is overlaid by a gas pay which has a thickness of from 6 to 12 feet. To complicate the situation further, in about one half of the wells so far drilled the gas pay is not separated from the oil pay by a shale break. Probably for this reason squeeze cementing has not been so successful as in the Amelia field, although some very notable results have been obtained. The greater thickness of oil pay, which permits a wider latitude in gun perforating and in squeezing, may be partly accountable for the successful jobs. Some of the best results have been obtained by first squeezing in the oil pay and then subsequently squeezing in the gas pay. This method is described in the completion record of the following well.

The well was drilled to a depth of 6854 feet, and casing set and cemented 1 foot off bottom. Gas pay was cored from 6818 to 6824 feet, and oil pay from 6824 to 6854 feet. On original completion, this well made over 10,000 m.c.f. of gas per day and no oil, through perforations between 6845 and 6850 feet. The well was killed, and a cement retainer run in on tubing and set at 6798 feet. Twenty barrels of water were pumped into the formation, with a break-down pressure of 3500 pounds per square inch, and a final water pressure of 1500 pounds per square inch. One hundred sacks of slow-set cement with a slurry weight of 14 pounds per gallon then were forced through the perforations, with a maximum squeeze pressure of 2750 pounds per square inch. After the cement had set for 72 hours, the hole was drilled out and the casing re-perforated between 6845 and 6851 feet. When tested, the well made all gas and no oil. The well again was killed, and the casing perforated between 6823 and 6827 feet. Retainer was set at 6798 feet, and 20 barrels of water pumped into the formation, with a break-down pressure of 3500 pounds per square inch, and a final water pressure of 1500 pounds per square inch. One hundred sacks of slow-set cement with a slurry weight of 14 pounds per gallon, then were pumped through the perforations following the water, with a maximum squeeze pressure of 3200 pounds per square inch. The cement was allowed to set for 60 hours; and when the retainer and plug had been drilled out, the well was completed through perforations at 6850 to 6852 feet, with an oil production of 97 barrels per day and a gas/oil ratio of 613 to 1.

Of the squeeze jobs that have been studied in the Fairbanks field, only about 60 percent have been truly effective. It appears in some cases to be quite difficult to build up a maximum squeeze pressure that is equal to, or that will exceed, the initial break-down pressure. In addition to the lack of a definite break between the gas pay and the oil pay in certain of the wells, which always may be regarded as being a detrimental factor to successful squeezing, it has been observed that slurry weights of not more than 14 pounds per gallon have been used generally. The

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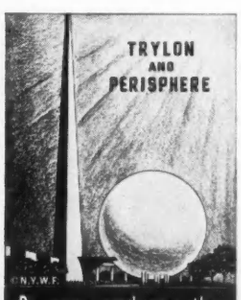

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use of heavier slurries might produce more consistent results. Furthermore, on several wells it has been necessary to squeeze three or four times to obtain the desired effects; and, therefore, it is likely that the free flow of oil into the hole may be impeded by a mud-cement slush behind the pipe. Multiple-batch jobs under such conditions, squeezing both into the oil pay and into the gas pay, might prove to be a most effective remedy, and probably could do no harm; because in this field, as in others, it is indicated that the cement slurry will set preferentially in the gas pay rather than in the oil pay.

Goldsmith Field, Ector County, Texas

Five squeeze-cement jobs have been made in the Goldsmith field. The five wells on which this work was performed all are located in the same approximate area, where a gas cap occurs above the oil pay—necessitating the setting of the casing through the gas-bearing part of the formation in order to reduce gas production. These wells were drilled during the early part of the development of the field, before the actual gas/oil contact was established in the gas-cap area. On all later wells it has been the practice to establish the gas/oil contact by coring and by drill-stem tests before setting pipe. Squeezing was resorted to in an attempt to shut off part of the open gas-bearing formation. This was done by filling the lower part of the hole with gravel and dumping a cement plug on top of the gravel. After the cement plug had set for approximately 72 hours, the cement was squeezed into the upper section, which was exposed, by pumping the slurry through tubing. It will be noted from Table 5 that only two of the jobs were successful, viz., on well "C" and well "E." The other three jobs showed some decrease in gas/oil ratio immediately after the cement had been drilled out; but, after a few days, the gas gradually increased until very little benefit was realized. It should be noted in Table 5, which gives results on these squeeze jobs, that the production figures after squeezing indicate a considerably smaller rate of flow than on the initial production tests. These tests were not made on a wide-open flow of the wells, such as is done to establish the well potential, but, rather, they correspond quite closely to the allowable production which is required for gas/oil-ratio tests. This does not make the data entirely comparable, as a wide-open flow through the casing probably would make all of these ratios somewhat higher.

Lockridge Field, Brazoria County, Texas

The producing section in the Lockridge field includes two major sand bodies. The upper sand contains gas only. All of the wells in this field, with one exception, are producing from the lower sand, and are completed at an average depth of 6350 feet. The lower sand has a maximum thickness of 60 feet, with an oil column of approximately 15 feet. There are a number of non-continuous lenticular shale breaks at the top of the lower sand, so that there is no effective barrier between the upper part (which carries gas) and the lower part (which is oil-bearing).

Because of this condition, the majority of the wells have at one time or another given trouble because of excessive gas production. That the high gas/oil-ratio condition is not due simply to gas-coning downward but, rather, to failure to get a complete cement bond between the casing and the wall of the hole is indicated in certain wells in which the casing originally was cemented through the entire producing sand and then perforated in the oil column. In wells of this type the excessive gas production was not excluded until after additional cement had been squeezed out through the perforations at the gas/oil contact.

However, not all squeeze jobs intended to shut off gas have been successful in this field; but after trying other completion methods, as outlined hereinafter, squeeze cementing has proved to be the only known method for correcting high gas/oil ratios. Approximately 24 squeeze-cement jobs intended to shut off gas have been performed on 11 different wells, and as many as 3 jobs have been done on a single well before the desired results have been obtained. Some of these jobs succeeded in shutting off excessive gas for a period of a few months, but later failed to do so. In contrast, however, in some cases wherein wells were entirely gas producers before being squeezed, after more than a year of productive life they are still oil producers with gas/oil ratios of less than 1000 to 1.

In one or two of the early wells packers were set in open hole to exclude gas, but results were only partly successful; and because packers deteriorate with time, this method was discontinued. Casing then was cemented slightly below the gas/oil contact, as determined from cores, without success in shutting off the gas. The first low gas/oil-ratio completion in the field was obtained by cementing blank liner through the entire producing zone, and then perforating opposite to the oil column. This method of

TABLE 5

Results of Squeeze Cementing in the Goldsmith Field to Reduce High Gas-Oil Ratios

WELL	A	B	C	D	E
Total depth, ft.	4,170	4,200	4,212	4,204	4,200
Casing point, ft.	3,750	4,105	4,119	3,968	4,140
Casing size, in.	7	7	7	7	5½
Tubing size, in.	2	2	2½	2	2
Pay thickness, ft.	58	25	95	99	70
Initial Production					
Oil, bbl.	1,053	608	731	2,380	1,329
Gas, MCF	22,600	44,395	30,464	13,000	17,100
Gas-oil ratio	21,400 to 1	73,000 to 1	41,500 to 1	5,100 to 1	11,300 to 1
Bottom-hole pressure, lb. per sq. in.	1,563	1,557	1,557	1,597	1,573
Date completed	3/25/36	10/17/36	11/22/36	3/16/37	11/16/38
Date squeezed	3/11/36	11/23/37	10/ 1/37	3/ 6/37	11/ 4/38
Depth of plug, ft.	4,083	4,084	4,130	4,100	4,165
Squeeze pressure, lb. per sq. in.	.....	1,200-3,100	Up to 1,500	600-1,200	1,200-2,100
Number of sacks of cement	30	35	295	400	90*
Gas-Oil-Ratio Test After Squeeze					
Oil, bbl.	288	53	36	62	119
Gas, MCF	4,920	1,000	157	725	69
Gas-oil ratio	7,000 to 1	18,800 to 1	4,410 to 1	11,690 to 1	572 to 1

* Only 5 sacks went into formation.

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completion has been far more successful than the preceding ones, but in most cases at least one squeeze job is necessary after the liner has been set. In one well casing was cemented below the gas/oil contact, and squeezed before completion. However, another squeeze job was necessary on this well before a low gas/oil ratio was obtained.

Another completion method tried in attempting to obtain a more complete cement bond between the casing and the wall of the hole, so as to exclude gas from the oil column, was to underream the 6¼-inch rathole to 9⅞-inch diameter down to a depth of 4 feet below the gas/oil contact; 7-inch casing then was set and cemented through the entire sand section, and the casing was perforated opposite to the oil pay. This method was successful in one well which still produces at a low gas/oil ratio. In another well this method gave a good shut-off for a period of only 9 months, and in two other cases failed to give any results. In the end this method was abandoned in favor of squeeze cementing.

The present general practice of completion in the Lockridge field consists of floating the casing in with a float shoe and float collar spaced 30 to 60 feet apart. The plugs are stopped by the float collar, leaving the casing full of cement below this point. Both the one- and two-plug methods have been used, and no difference in results has been noted. The plug-retainer type of circulating head is used exclusively to prevent air space between the upper plug and the cement slurry. The temperature at the level of the producing formation is approximately 130° F. Squeeze-cementing procedure under these conditions may be illustrated by the completion record of the following well, which is fairly typical for the field.

This well originally was completed with a gas/oil ratio of 25,000 to 1. The 7-inch casing had been cemented through the sand at a depth of 6374 feet. The well was killed, and a cement retainer set at 6296 feet, 6 feet above the perforations, and 20 barrels of water forced into the formation. The sand began to take water at 2000 pounds per square inch, and failed to break down below this pressure. A total of 75 sacks of cement was mixed, and 60 sacks delivered to the formation under 3000 pounds per square inch pressure. The tubing then was backed off from the cement-retainer body, and the excess cement washed out by reverse circulation. After the cement had set for 72 hours, the retainer and cement were drilled out, and the casing re-perforated. The well then was completed with a gas/oil ratio of 400 to 1.

It has been discovered in the Lockridge field that some of the wells will produce their oil readily with a reduced gas/oil ratio, after squeezing, through the perforations opposite to the oil pay through which the cement previously has been squeezed. From this has developed what is known as the Lockridge type of completion, which is illustrated in Figure 6, and which is described specifically in the completion record of the following well.

This well was completed with an initial production of 96 barrels of oil per day, with a gas/oil ratio of 9600 to 1, at a total depth of 6369 feet. Seven-inch casing was cemented to the bottom of the hole. In order to reduce the high gas/oil ratio, the casing was perforated with 9 shots between 6351 and 6355 feet, and a cement retainer set at 6345 feet. Thirty sacks of cement were pumped through the perforations, with a maximum squeeze pressure of 3350 pounds per square inch. After the cement had set, the retainer and cement were drilled out and tubing was run to bottom. The well was washed with water, and then with oil, and soon came in through the perforations that had been used for squeezing the cement into the formation with an initial production of 624 barrels of oil per day and a gas/oil ratio of 600 to 1.

From a cost standpoint, one operator's experience in this field is interesting. Five wells were treated successfully, with a total of 9 separate jobs; but of these 3 wells now need repairing to exclude gas. The average cost of these work-over jobs was $18,000 per well; and, considering the ratio of permanently successful jobs to subsequent failures as 3 to 2, the cost per successful work-over job is $30,000.

The experience at Lockridge has shown that 72 percent of the wells that have been squeezed to exclude gas have been succssful at least for a short period, but only 45 percent have been successful for any considerable period. Because of the relatively low chance of success in shutting off gas, and the high cost of this work, squeeze cementing in this field cannot be considered to be economically sound. However, no other completion method tried has been so successful in reducing gas/oil ratios.

Magnet Field, Wharton County, Texas

Squeeze cementing in the Magnet field, after completion, to reduce high gas/oil ratios has not been particularly successful. One well, in which the gas pay was squeezed before completion, gave satisfactory results; and it is reported that a multiple-squeeze job recently gave good results where former squeezes had resulted in failures. The Magnet field has a thin oil-pay section, ranging in thickness from 3 to 11 feet, and the oil pay is overlaid directly by a gas pay having an average thickness of about 30 feet with no separating shale break. Following is the record of an unsuccessful squeeze job in this field:

The total depth of the well was 5541 feet, and 5½-inch casing was set and cemented at 5539 feet, which was 9 feet below the gas/oil contact, and which left only 2 feet of open hole exposed in the oil pay. Gas pay was encountered from 5496 to 5530 feet, and oil pay from 5530 to 5541 feet. The well was completed originally with a daily production of 96 barrels of oil per day, and a gas/oil ratio of 2600 to 1 in open hole. In an attempt to reduce the gas/oil ratio, the casing was gun-perforated between 5522 and 5535 feet with 9 shots. A retainer was set as a bridge plug at 5536 feet, and another retainer set at 5519 feet. Twenty barrels of water were pumped into the formation, with an initial break-down pressure of 2750 pounds per square inch and a final water pressure of 1500 pounds per square inch. One hundred and thirty sacks of slow-set cement were forced through the perforations, with a maximum sqeeze pressure of 2500 pounds per square inch. After the cement had set, the retainers were drilled out and the well re-completed with a daily oil production of 96 barrels and a gas/oil ratio of 2500 to 1. This was practically no improvement over the original completion.

The well again was killed, and the casing perforated from 5519 to 5537 feet with 10 shots. A retainer was set at 5537 feet as a bridge plug, and another retainer set at 5519 feet. Twenty barrels of water were pumped into the formation, with an initial break-down pressure of 2750 pounds per square inch. Then 152 sacks of slow-set cement was pumped in following the water, of which about 28 sacks was squeezed through the perforations at a maximum pressure of 3800 pounds per square inch. After the cement had set and the retainers had been drilled out, the well was re-completed with a production of 91 barrels of oil per day and a gas/oil ratio of 1900 to 1.

The failures of squeeze cementing in the Magnet field may be attributed principally to the thin section of the oil pay, and to the lack of a separating break between the oil pay and the gas pay. The maximum squeeze pressures have been high enough under ordinary circumstances to give satisfactory results, and heavy cement slurries have been used.

(The discussion of squeeze cementing to reduce high gas/oil ratios continues in Part 4.)

SCHLUMBERGER

Precision GUN PERFORATING

Unitized Portable Skid for Boiler-Feed Pumps

ONE of the larger companies operating in California had been using boiler-feed pumps at drilling rig steam batteries that were more or less unwieldy, installed on long cumbersome skid foundations inconvenient for servicing and difficult to move from one location to another without spending considerable time in breaking out pipe connections. This situation is found in a more or less aggravated form around all drilling rigs, not only in California, but in most fields where steam is used for power.

The company in question recently developed a compact boiler-feed pump setting designed with a minimum number of fittings, simplified to a degree that only a few minutes were required to break out the pipe and winch the unit on a truck for transportation to another location.

No change was made in the type of pumps formerly employed at the boiler battery, and no change was made in the method of applying steam cylinder lubrication to the pumps themselves. The change was in the type of foundation and in the simplicity of piping and the facilities for breaking out and connecting steam and water connections.

To build the skid foundation for these pumps, two sections of "I" beams were obtained, each spaced at an adequate distance from the other to assure a rigid support. Two-inch tubing was welded as a connecting bar near each end. Upon this foundation, two sections of channel steel were welded. They were miter cut, bent and welded at the point of cutting, so that the flat upper sides were well above the "I" beams to mount the pumps at a height convenient for servicing, packing rods, and general maintenance.

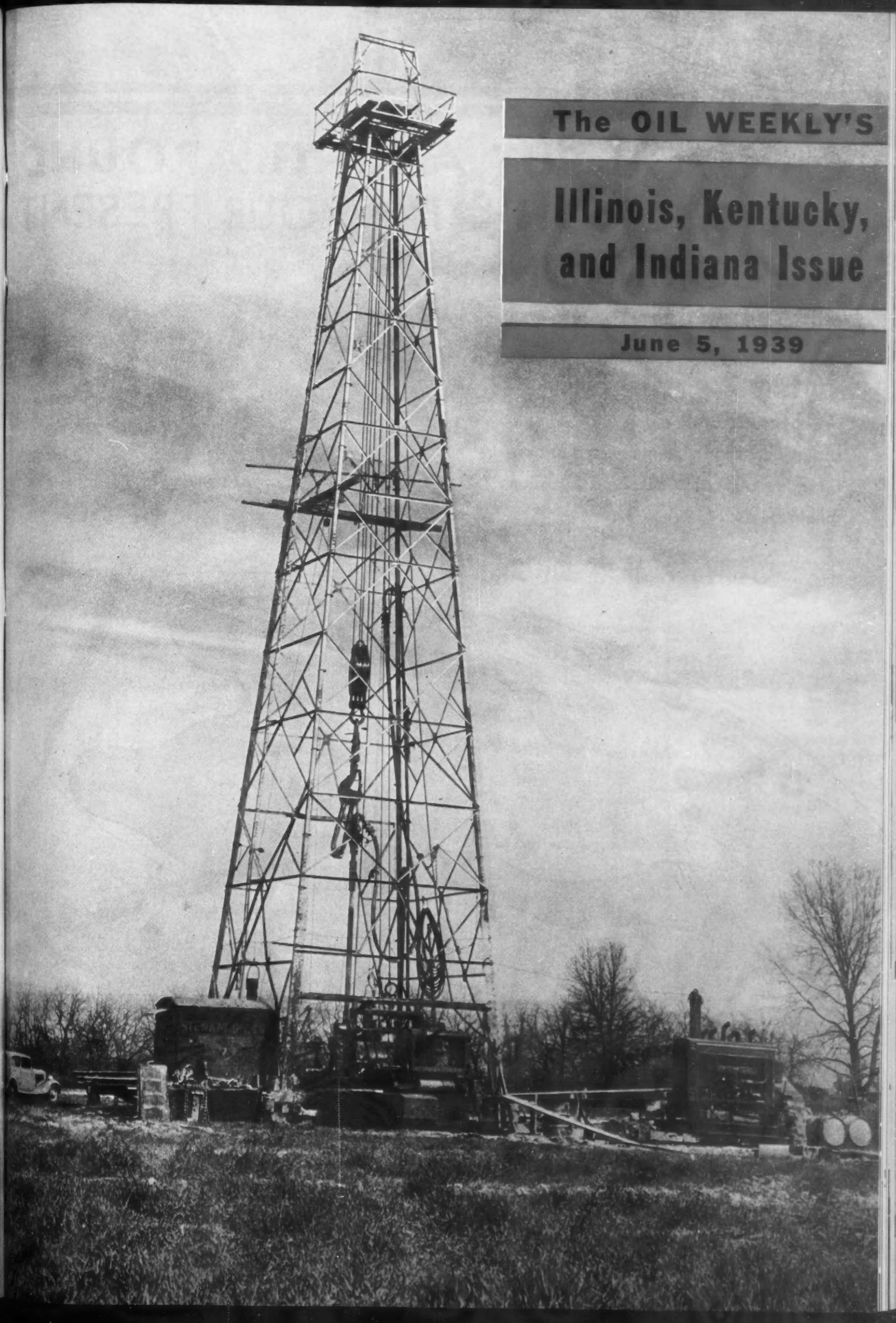
Across each end of these channel iron risers were welded bolting members to attach to the feet of the pumps. These sections were made of angle iron, with the open sides facing each other and with holes drilled for bolts. Pumps of standard dimensions were mounted on this solid skid foundation so that interchangeability was possible. By making a standard setting, and using uniform sized pumps, no matter where the units were being used, either or both pumps could be quickly removed and replaced with others, all of which could be accomplished by the simple method of removing the hold-down bolts.

In the matter of piping, a single two-inch steam line was attached to the foundation with hook bolts. This pipe had threads on both ends, and a two-inch tee in the center, which required two equal lengths of pipe for this part of the hook-up. On one end of the pipe a collar and bull plug were placed, while on the opposite end a ground joint lip union was connected so that the steam service line could be attached quickly. The steam piping was made up from the tee to the connections on the steam chests of each pump, using standard length nipples, master gates and throttle valves with three lip unions to provide a unit quickly assembled or broken down.

Exhaust piping consisted of a header attached beneath the pumps to the connecting cross members between the "I" beam skids. One end of this was fitted with a collar and bull plug, and the other with a ground joint lip union. Individual exhaust nipples from the steam chest of the pumps were welded to the headers, but had disconnecting lip unions between the header and the exhaust ports.

Suction and discharge headers were attached to the frame of the pump setting with unions, gates and plug stops for ease in controlling the units. The suction end had a detachable manifold, standardized with lip unions and control valves to attach boiler-feed treating units when the condition of the water required chemicals for scale control. Mechanical, force-feed lubricators were mounted above each pump on the steam chest and operated in the usual manner.

This type of boiler-feed assembly is rapidly replacing the older units at all boiler batteries in Santa Fe Springs, Monte Bello, and in other fields where there are company-owned drilling tools. This standardized unit, together with other improvements on piping at the boilers, reduces the time for tearing down and rigging up materially, and provides a complete unit of pumps that may be connected to any drilling rig without complicated pipe fitting and without many trips to a warehouse for connections and pipe dies.



The OIL WEEKLY'S

Illinois, Kentucky, and Indiana Issue

June 5, 1939

CAN YOU **PUT A RING AROUND PRODUCTION** WITH YOUR PRESENT EXPLORATION METHOD?

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EUGENE McDERMOTT
PRESIDENT

DALLAS, TEXAS

Drilling to Determine Illinois Daily Output

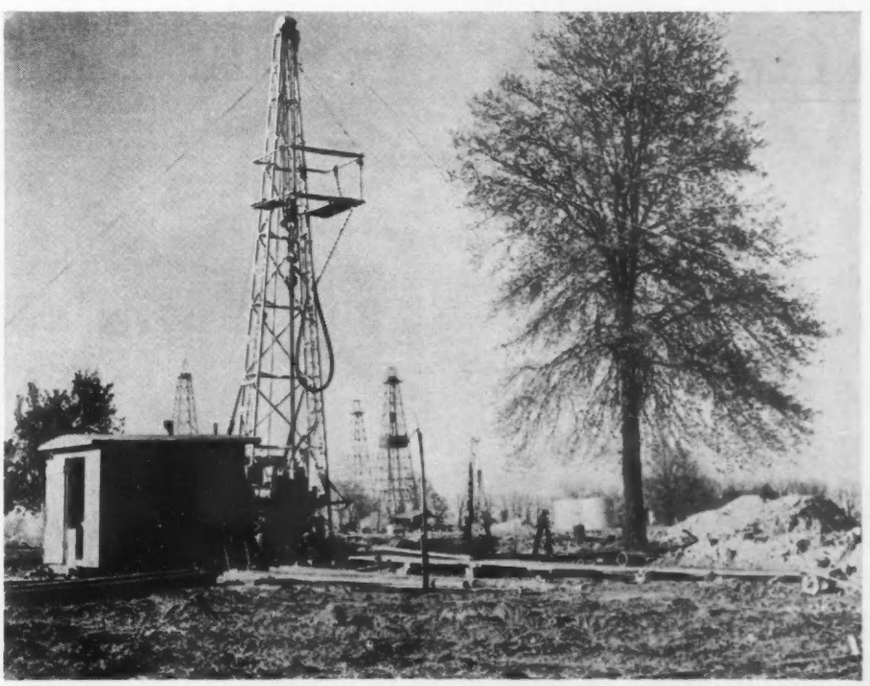
Production of the state should reach 275,000 barrels daily by early fall; then decline unless new fields are found.

DRILLING is the stimulus for daily output in the Illinois Basin.

The combination warrants 275,000 barrels daily to be reached this fall. Unless additional large structures are discovered from wildcat development, the peak of 1939 may fix the point of decline.

The reason daily output follows well completions so closely is that Illinois is a pumping area. Decline in output is so rapid that only additional wells can keep output climbing. Shallow producing formations and the speed of drilling and moving equipment allow crews to complete wells with such frequency that decline in output can be overcome so long as drilling is not hampered by weather conditions that prevent rapid movement of rigs and material.

Influence of drilling on output can be appreciated by the record of one set of six rigs, under one management, which have completed 30 wells in a month in the Loudon field, where the average depth is 1650 feet. It is the usual thing for this much rotary hole to be made in 100 hours. The procedure demands drilling the hole for the surface string after rigging up sufficiently to permit shallow drilling. While the surface string is waiting on cement, rigging up is completed and the hole carried to the top of the formation. When the cement has been run for the oil string, the



This scene in the Salem field is typical of the condition that will bring output in the Illinois Basin fields to 275,000 barrels daily this fall.

Beyond the cluster of derricks is a church lot, which was offset well for well last summer. Now leases adjoining those which adjoin the church lot are being similarly drilled.

At its peak half the daily output of the Basin should come from the Salem field, where both the Bethel sand and the McClosky lime are under development.

rotary rig is moved to a derrick already standing to repeat the cycle. Completion of wells is left to cable tool units, which drill out the plug, clean out after the shot and run tubing and rods.

Under the combination of maintaining completions to stimulate daily output, it is the Salem field which should determine the peak of output. It has another 500 wells to be completed in the Bethel sand. Until the offsets within this number are completed, this field will be under an intensive campaign that will keep its output climbing. Its daily output is already in the 100,000-barrel class and may reach 150,000 barrels by the time its total of rigs running again drops below the 100 figure.

After that the status of daily output will depend on drilling to the McClosky lime at Salem and the drilling in other fields. It is not possible to forecast the development of the lime formation at Salem. This formation has more than 100 wells producing there now. Throughout the winter the inclination was to ignore lime production pending development of sand wells. Although lime wells so far have been drilled on 10-acre spacing, the fact that fields with lime production only have gone to 20-acre spacing left the possibility that the lime at Salem might be drilled on wider spacing.

On its acreage and 10-acre spacing for each formation, Salem calls for 2200 wells. This is in excess of a well to 10 acres because the field has so many church lots, school house tracts and abandoned roads, where close spacing demanded corresponding offset drilling. A shift to 20-acre spacing for lime wells would reduce this total accordingly and allowance for some lime development on 20-acre spacing has been given in the tabulation under the column of wells to be drilled.

Currently the south end of the Loudon field, where leaseholds are small, is under intensive drilling similar to competitive areas at Salem. When this part of Loudon has been drilled, its further development will be under little competitive necessity and will be carried through on a predetermined schedule, with 20-acre spacing and two sands producing from one well. Loudon therefore should maintain a daily output in excess of 50,000 barrels daily over a long period rather than build a high yield suddenly.

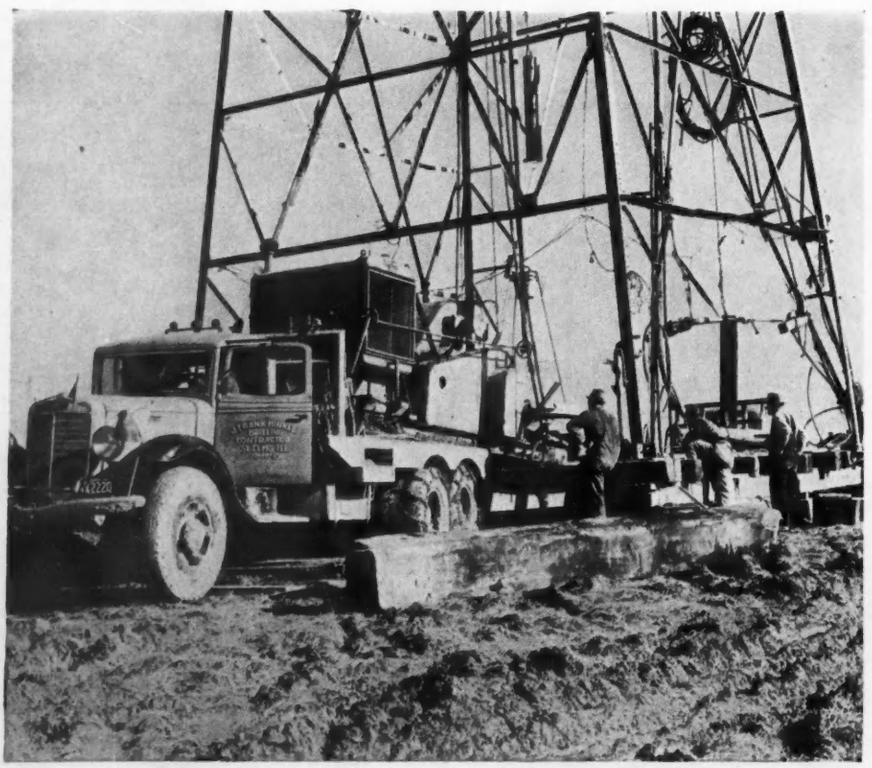
Next field in influence on daily output is Cordes, where recent dry holes have compelled a reduction in estimate of area and ultimate yield. Small leases and numerous lease owners, however, have brought it into an intensive drilling campaign, which will be carried out until field limits are determined.

Total of rigs running in the Illinois Basin was 422 when calculations were completed for the accompanying tabulation. Since then the number has increased. Every indication is that the total will reach 600 by mid-summer. Under this total the number of completions will reach 400 per month. That pace of drilling could complete the drilling requirement for the whole basin within 7 months.

But the number of active rigs will decline at the end of the summer for two reasons. One is that leases will be drilled out, in particular those demanding offsets at Salem, Loudon and Cordes. The other is that unfavorable road conditions will halt drilling later in the year.

The estimate of wells yet to be drilled in the 32 fields already discovered is 2842. Two discoveries made since the calculations were made and the possibility of 10-acre spacing for McClosky lime wells at Salem, indicate that 3000 wells are in prospect. This total includes 500 wildcat completions within the next two years.

It is likely that the drilling campaign for these fields will extend beyond 1940, especially in Loudon.



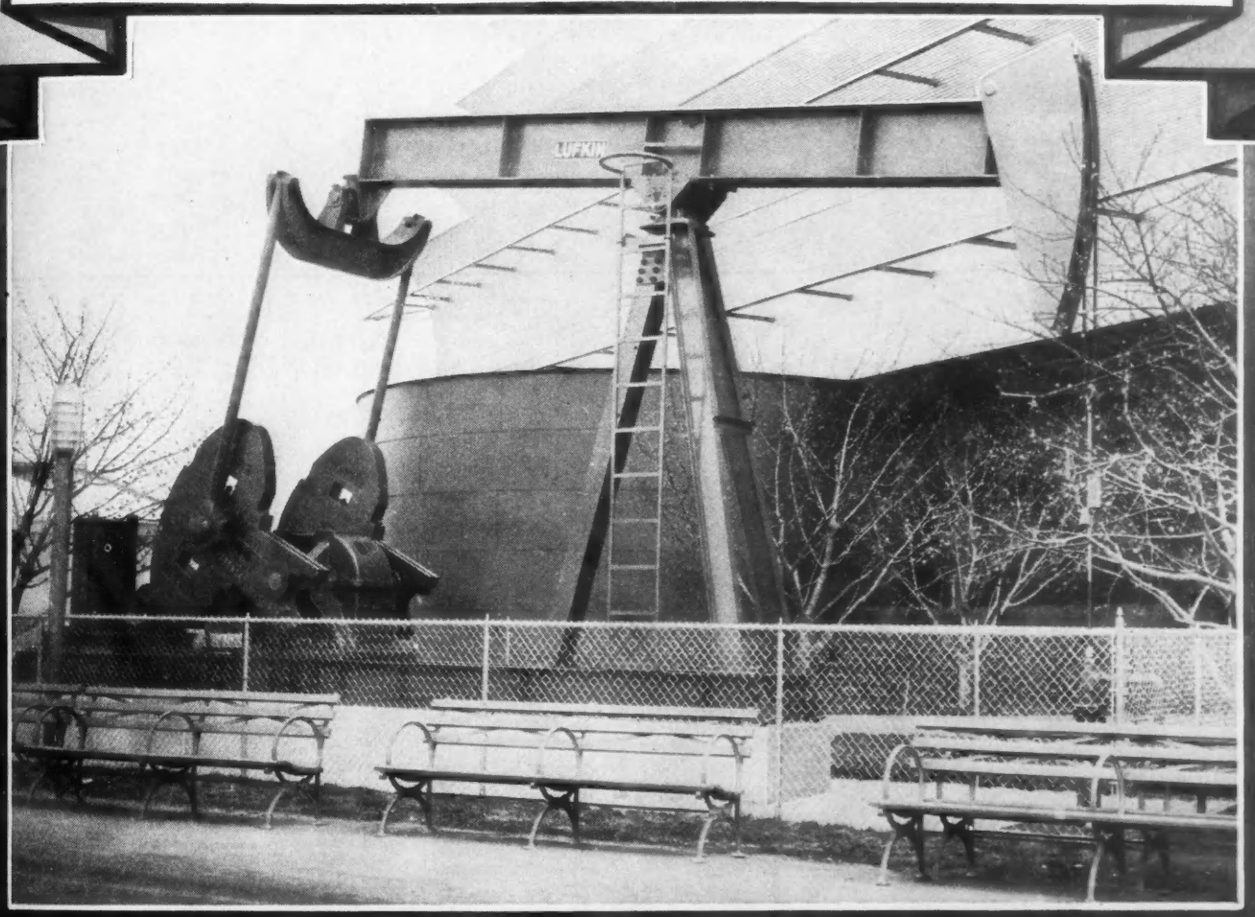
Light equipment, assembled on one set of skids, permits quick movement and quick rigging up. Here engine, draw works and rotary table are being pulled from the bed of one truck by the winch of another truck on the opposite side of the derrick.

s very much . . .
"At the Fair"

A HEARTY INVITATION TO VISIT

The Lufkin Exhibit

AT THE NEW YORK WORLD'S FAIR



PUMPING UNITS

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THE LUFKIN FOUNDRY & MACHINE COMPANY, BRANCHES IN PRINCIPAL OIL CENTERS

Oil Possibilities of Deeper Beds in Illinois Basin

Devonian-Silurian limestone has good prospects.

Trenton limestone has fair possibilities.

St. Peter sandstone is still an uncertainty.

By ALFRED H. BELL and GEORGE V. COHEE,
Illinois State Geological Survey *

THE thickness of sedimentary strata in the deeper part of the Illinois Basin is estimated to be more than 10,000 feet. The deepest production of oil obtained so far is from a depth of approximately 3400 feet. Almost all the oil produced to date in the new fields is from Mississippian strata, the lowest of which, the McClosky "sand," is more than 1000 feet above the base of the Mississippian. The lowermost two-thirds of the sedimentary column, comprising the lower part of the Mississippian and all the Devonian, Silurian, Ordovician, and Cambrian systems, remains largely untested in the deep part of the basin. Up to date less than one percent of the state's oil has been produced from strata below the Mississippian.

Interest in the Devonian oil possibilities of the Illinois Basin was stimulated by the discovery in December, 1938, of Devonian oil on the crest of the Sandoval dome where production was obtained from the Bethel sandstone in the Chester series at comparatively shallow depth. This led to the drilling of two other Devonian tests near the margins of the area productive from the Bethel, both of which proved to be dry holes.

The extent of recent test drilling to horizons below the top of the Devonian-Silurian limestone is shown in Tables 1 and 2. The remainder of this article is a review of the known occurrences of oil and gas in Illinois below the top of the Devonian, and a discussion of the possibilities for future development of production from these deeper strata.

The discovery well of the Louden field, The Carter Oil Company's Miller 1, Section 12-8n-3e, Fayette County, produced some oil from the Devonian, but was plugged back to the Cypress sandstone from which it is now producing. The well is located at the northeastern edge of the structure within the area of production from the overlying Chester formations.

Areas of Devonian-Silurian Production

Recently production was obtained from the Devonian in a well drilled in Section 21-6n-4w, Bond County, on the flank of the Sorento

TABLE 2

Wells Completed in Devonian and Trenton Producing Areas Since 1936

YEAR	Colmar-Plymouth Field — Hoing Sand (Devonian)		Dupo Field — "Trenton" Limestone	
	Producers	Dry Holes	Producers	Dry Holes
1936	9	4	7	0
1937	12	3	0	0
1938	1	1	6	0
1939 (First 4 months)	1	0	6	0
Total	23	8	19	0

* Published with the permission of the Chief.

TABLE 1

Wildcat Wells Drilled to Devonian Limestone or Deeper Since January 1, 1936

County	Company and Farm	Location	Total Depth	Deepest Formation Tested	Top	Remarks
1936:						
Brown	Super Oil, Meats No. 1	SE SE SE 7-2S-3W	780	Maquoketa	....	Dry
Champaign	Meyers et al, Silver No.1	NE NE NW 11-18N-9E	1725	"Trenton"	1606	Dry
Macoupin	Hettick Oil, Starkweather No. 1	NW SW 36-11-9W	1076	Devonian	1000	Dry
Pike	Super Oil, Rush No. 1	NW NE 19-5S-2W	412	Silurian	4000	Dry
1937:						
Bond	Huber Drlg. Co., Kunz No. 1	SW NW NW 11-6N-5W	3101	St. Peter	3097	Dry
Christian	Parshall-Graham, Yockey No. 1	SW SW NE 36-15N-2W	3005	St. Peter	2925	Dry
Christian	Rogers Bros., Johnson No. 1	NE SE SE 27-12N-2W	3112	"Trenton"	3004	Dry
DeKalb	Paul Schulte, Wyman No. 1	NE NE SE 35-41N-5E	4348	Pre-Cambrian	3845	Dry
DeKalb	Barton et al, MacQueen No. 1	SW NE NE 27-42N-3E	2970	Cambrian	600	Dry
Effingham	Kingwood-Carter, Bartels No. 1	C W NW NE 26-6N-5E	4117	"Niagaran"	3995	Dry
Fayette	Carter, Miller No. 1	C W NW NW 12-8N-3E	3100	"Niagaran"	3072	57 Bbl.[1]
Fayette	Benedum-Trees, Vanzant No. 1	SW SW SW 24-6N-1W	3155	Dev.-Sil.	2822	Dry
Greene	Witt et al, Gogsall No. 1	SE NE NW 25-10N-13W	800	"Trenton"	700	Dry
Kane	Duvall et al, Strown No. 1	SW NW SW 35-40N-8E	670	St. Peter	....	Dry
Lawrence	Strauss et al, Robeson No. 1	NW SE NE 16-3N-10W	3302	"Niagaran"	3073	Dry
Madison	T. C. Havelka, Fee No. 1	SW SW NE 24-5N-8W	1987	"Trenton"	1960	Dry
Marion	Carter, Metzger No. 1	C N NW SE 4-4N-3E	3671	"Niagaran"	3603	Dry
Mason	Werner Bros., Cashin No. 1	SE SE SE 22-23N-7W	1000	"Niagaran"	856	Dry
Perry	Forester, Fee No. 1	C W SW NW 5-6S-1W	5257	St. Peter	5136	Dry
Pike	Super Oil, Eagle No. 1	NE NW SE 24-5S-3W	750	"Trenton"	735	Dry
Rock Island	Rockdale Oil, Clifton No. 1	SW SE 28-20N-2E	1353	Ordovician	....	Dry
St. Clair	Colgan, Reichart No. 1	NW SW NW 18-1S-7W	2013	"Trenton"	1914	Dry
Will	Nelson, McGlashan No. 1	SW NE 25-35N-12E	2063	Cambrian	....	Dry
1938:						
Bond	A. T. Whitehead et al, Poland No. 1	NW SW SW 26-6N-2W	3350	"Trenton"	3320	Dry
Bond	File et al, F. Barron No. 1	SE SE NW 21-6N-4W	1900	Devonian	1813	Dry
Bond	DeMayo et al, S. J. Dressor No. 1	SW NE NW 21-6N-4W	1835	Devonian	1800	15 Bbls.
Bond	Universal & DeMayo, Molden No. 1	NW NE SW 24-6N-4W	2045	"Niagaran"	1885	Dry
Brown	Fell Oil Trust, J. Thomas No. 1	NE SW SW 15-1S-2W	642	"Niagaran"	....	Dry
Bureau	Harrington Bros., S. L. Doty No. 1	SE SE NW 8-17N-6E	1347	St. Peter	1345	Dry
Cass	Ed Duvall, Lester Bowen No. 1	NW NW SE 30-17N-12W	585	"Niagaran"	503	Dry
Champaign	Nedra Oil & Gas Corp., Mohr No. 1	SW SW SW 9-17N-10E	685	"Niagaran"	486	Dry
Champaign	Casey Edwards, Porterfield No. 1	NW NE NE 9-17N-10E	1065	"Niagaran"	....	(2)
Champaign	Barber & Siever, J. Lindsey No. 1	C NW SE 20-20N-8E	610	"Niagaran"	588	Dry
Clark	Pierson & Yeager, Robinson No. 1	SE SW NW 17-10N-11W	2555	"Niagaran"	2450	Dry
Clark	MidAmerican Resource, Handy No. 1	NW NE SE 17-11N-12W	2440	"Niagaran"	2363	Dry
Clark	Nat. Consumers, M. Jackson No. 1	NW NE NW 21-11N-12W	2451	"Niagaran"	2367	Dry
Clay	Carter Oil Co., W. T. Cox No. 1	C E SE SW 14-4N-5E	4325	"Niagaran"	4232	Dry
Coles	Kingwood Oil Co., Tomberlin No. 1	SE SE SE 21-11N-10E	3542	"Trenton"	3290	Dry
Coles	Mabee et al, Oakland Bank No. 1	SW SW SW 30-14N-14W	1134	"Niagaran"	918	Dry
Coles	Gregory & Mechling, Foltz No. 1	NW SE NE 31-14N-14W	1203	"Niagaran"	....	Dry
Crawford	W. Hasting et al, Athey No. 1	C N NE NE 18-8N-12W	2952	"Niagaran"	2780	Dry
Edgar	Sun Oil Co., Cora Goodwin No. 1	C W NE SE 22-13N-12W	2314	"Niagaran"	2209	Dry
Edgar	J. M. Huber Corp., Adams No. 1	NE NE NE 15-14N-11W	2160	"Niagaran"	1930	Dry
Effingham	Kingwood Oil Co., McWhorter No. 1	C E SE NW 15-6N-6E	5823	"Trenton"	5280	Dry
Fulton	K. & F., Quigle & Freeburg No. 1	SW SW NW 11-7N-1E	657	"Niagaran"	589	Dry
Hancock	Callihan et al, J. D. Hall No. 1	NE SE NE 1-3N-5W	568	Hoing sand	....	Dry
Hardin	Maretta Oil Co., Fricker No. 1	SE SE 30-11S-8E	2345	"Trenton"	2142	Dry
Iroquois	C. Whittet, Martin Dooley No. 1	SW NW SW 14-26N-12W	1096	Maquoketa	917	Dry
Jackson	Stanolind, Leiner No. 1	NE NW SW 20-7S-4W	4144	St. Peter	4093	Dry
Jefferson	Carter Oil Co., Tate No. 1	C W NW NE 10-1S-2E	3874	"Niagaran"	3650	(2)
McDonough	W. I. Cole, M. Williams No. 1	NW NE SE 6-4N-4W	483	Hoing sand	445	Dry
McDonough	W. I. Cole, M. Williams No. 2	NW SE SE 6-4N-4W	511	Hoing sand	....	Dry
McDonough	Ed Jones et al, Lee McClure No. 1	NW NW SW 2-5N-4W	820	"Trenton"	765	Dry
Macon	Sun Oil Co., Powers No. 1	SW SW NE 30-17N-2E	2992	St. Peter	2937	Dry
Mccoupin	Phillips Petroleum, Giller No. 1	NW NE NW 15-11N-8W	1828	"Trenton"	1686	Dry
Marion	Southwestern, Benoist No. 21	NW NW NE 8-2N-1E	2926	"Niagaran"	2876	319 Bbls
Menard	Scroggins et al, Johnson No.1	SE SW SW 24-19N-5W	1570	"Niagaran"	1340	Dry
Monroe	Fernwald et al, Steinman No. 1	NE NE NE 10-3S-11W	780	St. Peter	....	Dry
Morgan	Waverly Oil Synd., Hubbs No. 1	SE NE SE 33-14N-8W	1685	"Trenton"	....	Dry
Morgan	Alexander Oil, Cockin No. 1	NE SW SW 25-15N-9W	1590	"Trenton"	1430	Dry
Piatt	Max Pray et al, Baker No. 1	SW NE NE 17-18N-6E	3021	"Trenton"	2864	Dry
Randolph	Mabee et al, Wilson No. 1	E SE NE 3-4S-5W	3640	"Trenton"	3150	Dry
Randolph	Ames Drill. Co., Nicholson No. 1	SW NW NW 12-5S-9W	1900	St. Peter	1880	Dry
Sangamon	Wittlinger et al, King No. 1	SW NE SE 24-15N-7W	1850	"Trenton"	1806	Dry
Schuyler	O. D. Arnold et al, Quinn No. 1	SE NE NW 27-2N-1W	850	"Trenton"	802	Dry
Vermilion	A. M. Myers et al, Foreman No. 1	SE SE SW 13-18N-14W	1452	"Niagaran"	....	Dry
Warren	Ketcherside, Ross No. 1	C W NW NE 26-8N-1W	875	"Trenton"	....	Dry
Warren	W. C. & W., Sorenberger No. 1	NE NW SE 35-12N-1W	495	"Niagaran"	370	Dry
1939 (1st four months)						
Christian	Oil Dev. Co., Post No. 1	SE SW NW 1-14N-1W	2260	Devonian	2145	Dry
Clark	Kingwood Oil Co., Miller No. 1	C SE NE NE 36-11N-12W	2573	Devonian	2425	Dry
Coles	Wheeles et al, Micheal No. 2	SE SE NE 2-11N-7E	3307	Devonian	3252	Dry
Coles	Texas Co., Tracy No. 1	C W NW SE 22-13N-7E	3222	Devonian	3100	Dry
Coles	Kingwood Oil, Tivnen No. 1	C SW NE SE 30-13N-8E	3399	Devonian	3317	Dry
Coles	E. Oakland Synd., Temple No. 1	SW SE NE 36-14N-10E	1400	Devonian	....	Dry
Edgar	Black & Moore, Sturgell No. 1	C NW NE 12-12N-11W	2028	Devonian	1968	Dry
Fulton	Ind. Prod. & Ref., Bernhard No. 1	SW NW NW 12-7N-1E	758	Devonian	690	Dry
Greene	L. C. Simmel, Steele No. 1	NE NE SE 1-18N-14W	444	"Trenton"	185	Dry
Jefferson	Benedum-Trees, Inter. Coal No. 1	NE NE SW 9-4S-2E	4422	Devonian	....	Dry
McDonough	K. & F., Hunt No. 1	SW SW NW 25-4N-4W	410	Denovian	....	Dry
McDonough	H. O. Hammer, Jones No. 1	C W SE NW 22-7N-3W	920	"Trenton"	....	Dry
Macon	Decatur O. & G. Co., Cook No. 1	NE NE SW 21-15N-2E	3175	"Trenton"	3035	Dry
Macon	Snake Hill Dev. Co., Dipper No. 1	NE SE NW 17-16N-2E	2125	Silurian	2060	Dry
Macoupin	Dillen et al, Keele No. 1	SE SE NE 32-10N-9W	1540	Silurian	1065	Dry
Madison	L. C. Simmel, Keeler No. 1	NE NE SE 7-3N-8W	1367	Dev.-Sil.	....	25 Bbls.[3]
Madison	Harry Hazlett, Wetzel No. 1	SW SW SE 12-5N-6W	1916	Dev.-Sil.	1856	Dry
Madison	Penn. Ill., Hurlbrink No. 1	NE NE NE 19-4N-8W	1415	Dev.-Sil.	....	Dry
Marion	Max Pray, Langenfeld No. 1	SW SW NW 4-2N-1E	3098	Devonian	3005	Dry
Marion	Menhall, I. C. R. R. No. 1	SW NE NW 8-2N-1E	3021	Devonian	2967	Dry
Marion	Kingwood Oil Co., Burge No. 1	C NE SE NE 18-1N-2E	3682	Devonian	3512	Dry
Monroe	Ames Drill., Gummershiemer No. 1	NW 2-2S-10W	434	"Trenton"	410	29 Bbls.[4]
Monroe	Collins et al, Hempe No. 1	SE NE SE 36-3S-10W	830	"Trenton"	780	Dry
Montgomery	W. O. Allen, Ward No. 1	NW NW NE 23-12N-5W	2334	"Trenton"	2307	Dry
Randolph	Seward et al, Rehiner No. 1	C SE SE NE 19-4S-7W	1810	"Trenton"	....	Dry
Randolph	Badger O. & G. Co., Schrader No. 1	SW NW NW 27-6S-6W	2305	"Trenton"	2280	Dry
St. Clair	Moseback et al, Miller No. 1	SE SE NW 31-1S-7W	2000	"Trenton"	1927	Dry
St. Clair	A. H. Emenhiser, Alberts No. 1	C N NW SW 31-1N-8W	1615	"Trenton"	....	Dry
Sangamon	A. C. Leathers, Workman No. 1	NW SE SE 28-15N-6W	1903	"Trenton"	1866	Dry
Schuyler	Harry Schwartz, Thompson No. 1	SW SW SW 25-1N-2W	1100	"Trenton"	812	Dry
Tazewell	Hopedale O. & G. Co., Litwiller No. 1	NW SW SW 2-22N-3W	2310	St. Peter	2139	Dry

[1] Well was later plugged back to the Cypress sandstone where it is now producing.
[2] Devonian—dry. [3] Well drilled in old Collinsville field. [4] Well drilled in old Waterloo field.

Regardless of Field, Formation or Country..

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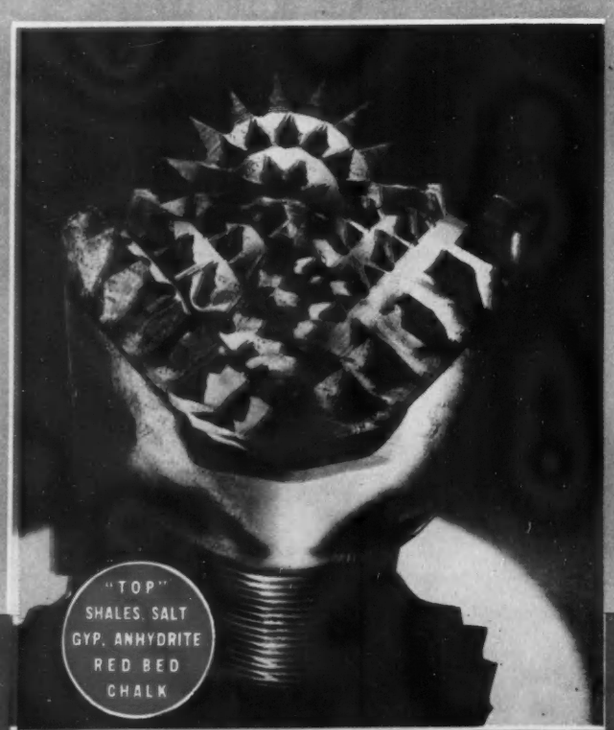
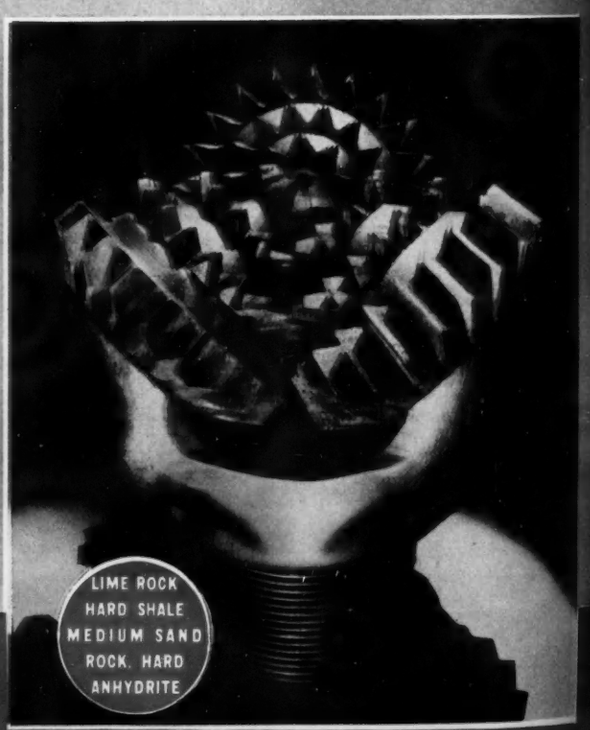


Series "OS"



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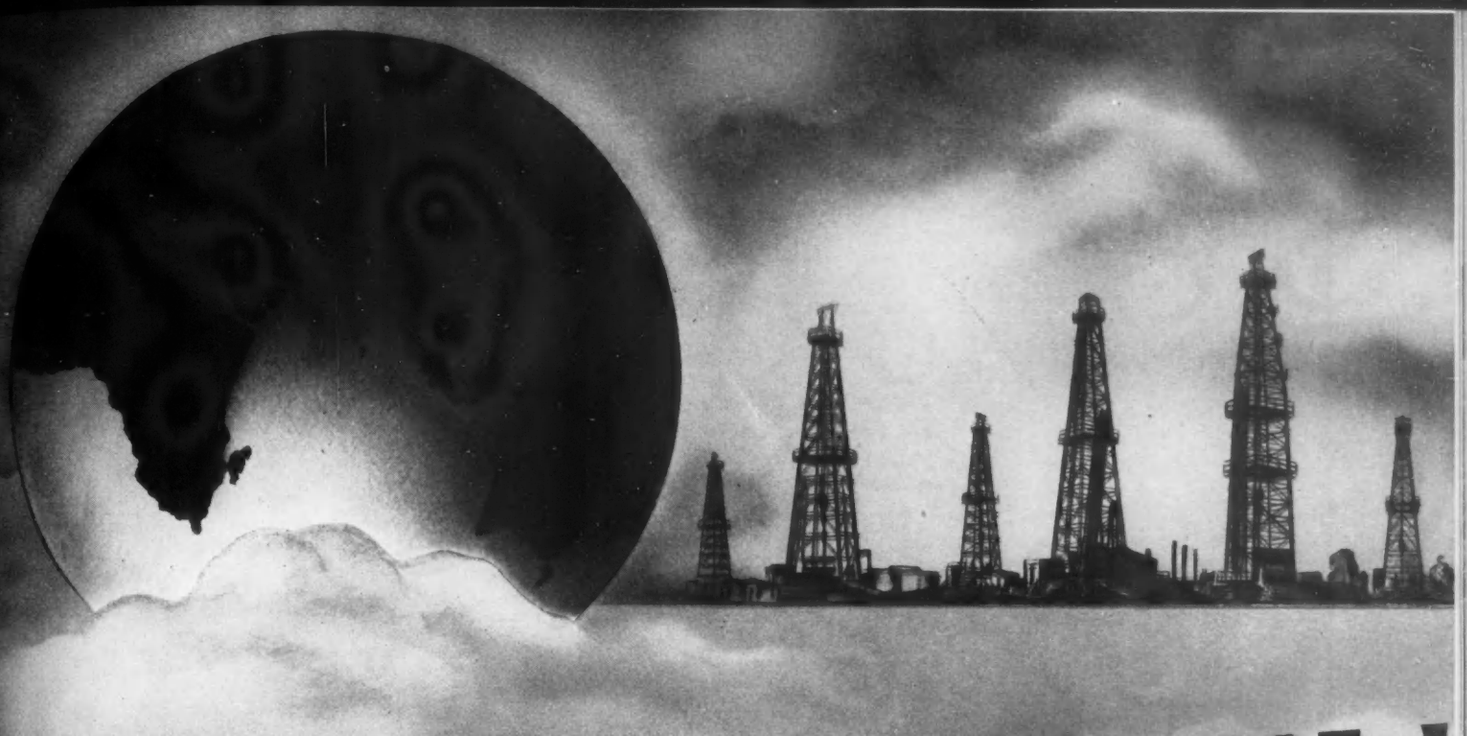

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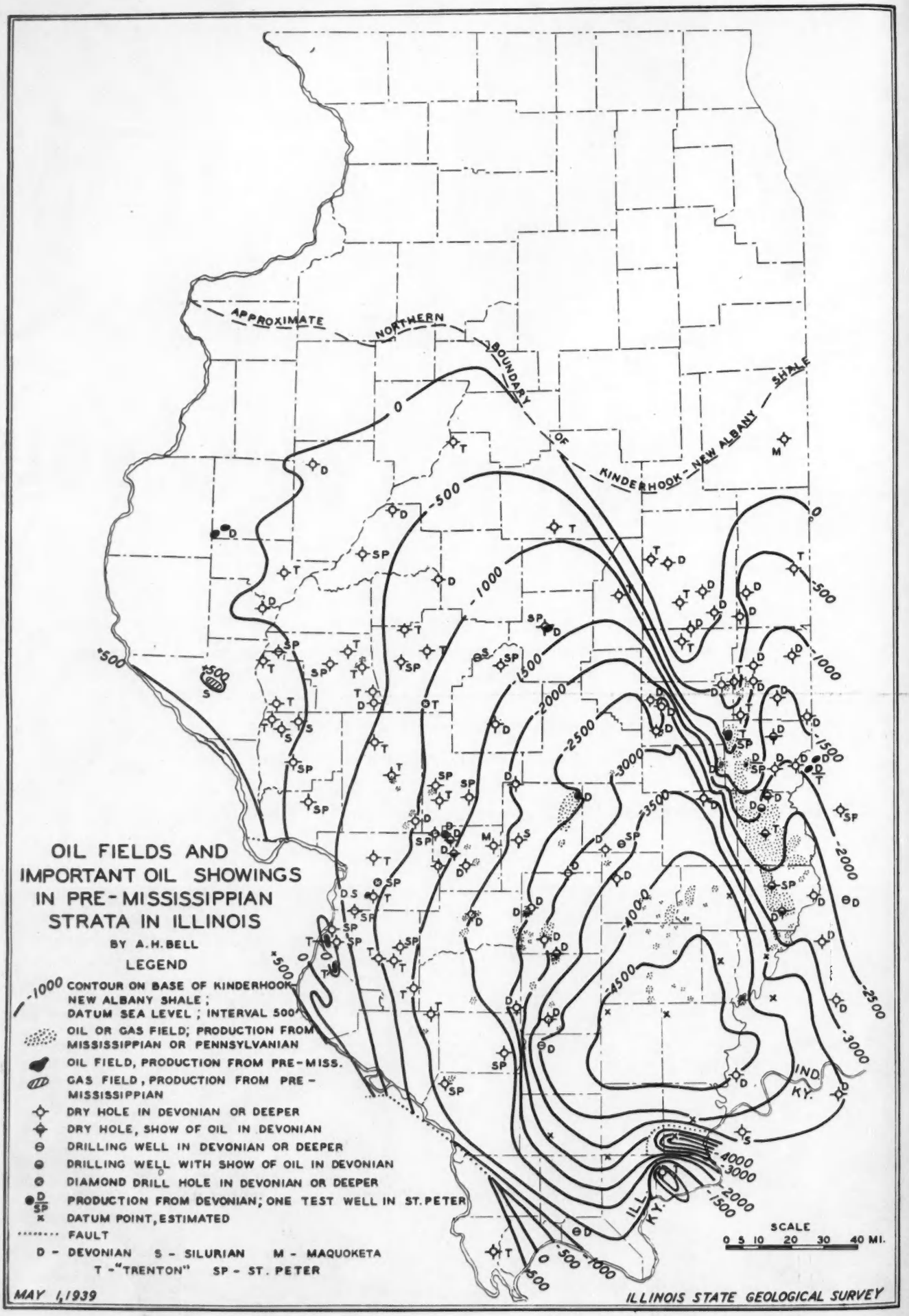

APPROXIMATE NORTHERN BOUNDARY OF KINDERHOOK-NEW ALBANY SHALE
OIL FIELDS AND IMPORTANT OIL SHOWINGS IN PRE-MISSISSIPPIAN STRATA IN ILLINOIS
BY A.H. BELL
LEGEND
-1000 CONTOUR ON BASE OF KINDERHOOK-NEW ALBANY SHALE; DATUM SEA LEVEL; INTERVAL 500'
OIL OR GAS FIELD; PRODUCTION FROM MISSISSIPPIAN OR PENNSYLVANIAN
OIL FIELD, PRODUCTION FROM PRE-MISS.
GAS FIELD, PRODUCTION FROM PRE-MISSISSIPPIAN
DRY HOLE IN DEVONIAN OR DEEPER
DRY HOLE, SHOW OF OIL IN DEVONIAN
DRILLING WELL IN DEVONIAN OR DEEPER
DRILLING WELL WITH SHOW OF OIL IN DEVONIAN
DIAMOND DRILL HOLE IN DEVONIAN OR DEEPER
D/SP PRODUCTION FROM DEVONIAN; ONE TEST WELL IN ST. PETER
DATUM POINT, ESTIMATED
FAULT
D - DEVONIAN S - SILURIAN M - MAQUOKETA
T - "TRENTON" SP - ST. PETER
SCALE
0 5 10 20 30 40 MI.
IND.
KY.
ILL.
KY.
MAY 1, 1939
ILLINOIS STATE GEOLOGICAL SURVEY

dome. The well, which is a small producer, was drilled higher on the structure and ¼ mile north of an old well which had a good show in the same formation.

The Colmar-Plymouth oil field in McDonough and Hancock counties of western Illinois is the most important area of Devonian production in the state. Oil occurs in sandstone lenses below upper Devonian limestone and above Maquoketa shale of Ordovician age, the Silurian strata being absent in this area. The Hoing sand averages 21 feet in thickness and is reached at a depth of 450 feet. Production is from an east-west dome between Colmar and Plymouth and a terrace 1½ miles east of Colmar.

Gas was produced from the Silurian dolomite on the Pittsfield-Hadley anticline in Pike County, also in western Illinois. The structure is an elongated anticline with small domes along the main axis. The producing formation is overlain by shale of upper Devonian and lower Mississippian age. The thickness of "pay" was usually 10 feet and the average depth to the top of the producing formation 265 feet. The wells were scattered over an area of almost 9000 acres and the gas was used in farm residences.

Small production of oil was obtained in the Devonian-Silurian in Section 8-3n-8w, Madison County, at a depth of 1300 feet. From 20 to 30 feet of "sand" was recorded in the wells. Recently a small producer was drilled near the abandoned wells in Section 7-3n-8w, and from a study of samples from a nearby well it was found that the Devonian is represented by only a few feet of calcareous sandstone overlying the Silurian strata.

Several wells drilled a short distance northwest of Decatur, Illinois, had shows of oil in the Devonian but not enough for commercial production. In 1937 two of the wells were acidized and made small producers. The Devonian was reached at a depth of 1950 to 2000 feet and was from 10 to 20 feet thick.

The Devonian-Silurian has been productive in the Martinsville pool in the Southeastern field. Oil is produced from the weathered zone in the upper part of the limestone, and the best production is found 10 to 30 feet from the top which is reached at a depth of 1550 feet. A small amount of gas was produced from the Devonian by two wells in the Siggins pool in eastern Cumberland County, and some shows of oil were noted. The Devonian-Silurian is not productive in other pools in the Southeastern field although shows have been reported in various areas tested. Just across the state line in Vigo and Sullivan counties, Indiana, the Siosi field produces oil from Devonian strata, as does the Prairie Creek field about four miles to the northeast.

Areas of "Trenton" Production

The "Trenton" limestone produces oil in 11 wells near the top of the Westfield dome. The limestone is reached at a depth of 2250 feet and the "pay" was found in the upper 150 feet of the limestone. These wells had a flush production of more than 100 barrels after shooting but dropped to 10 or 12 barrels a day on pump in a few months. A well was drilled to the "Trenton" on the side of the Martinsville dome and made a small producer. The "Trenton" on top of the structure has not yet been tested.

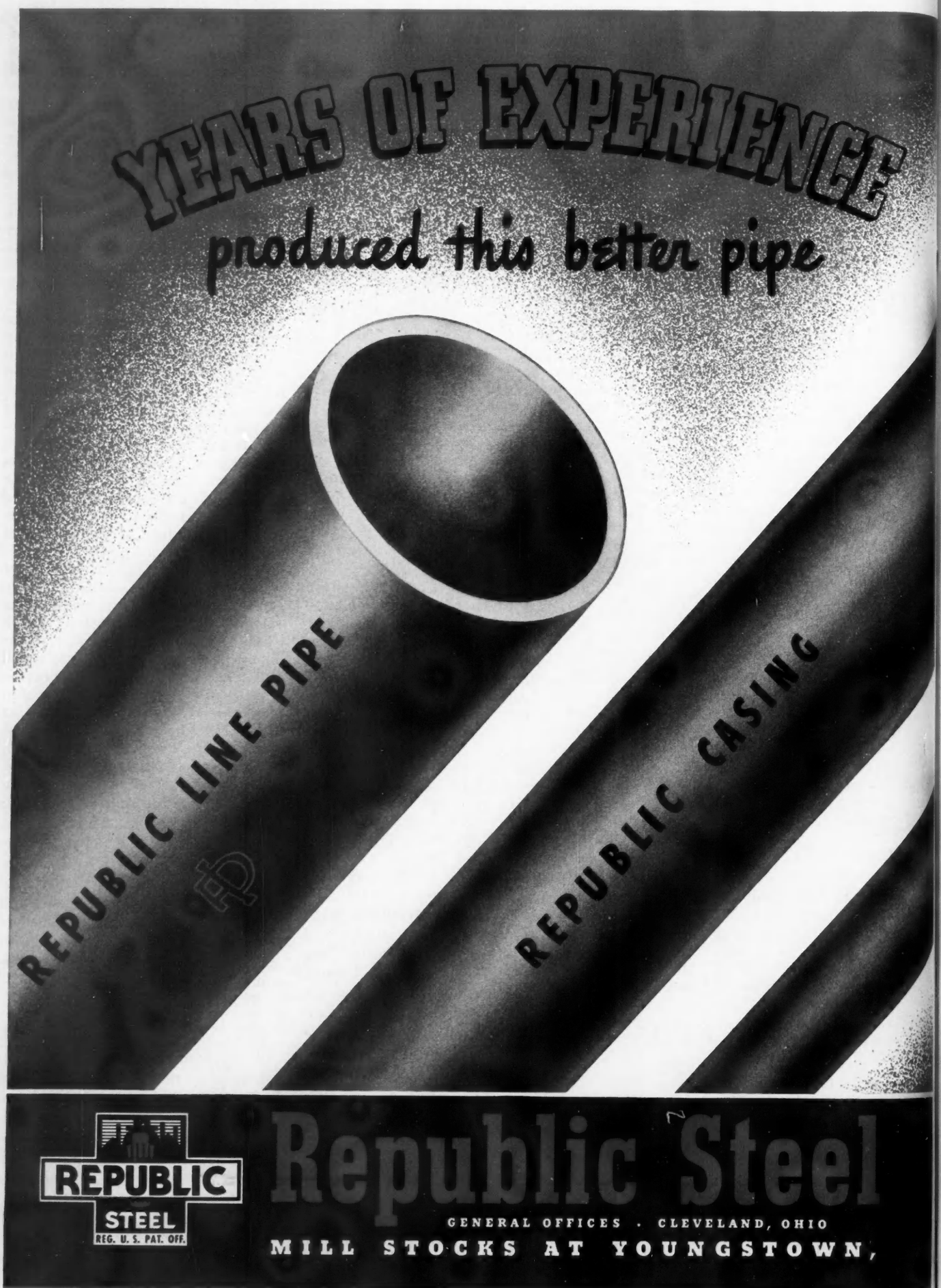
Oil has been produced from the "Trenton" limestone in the Dupo field in St. Clair County a short distance south of East St. Louis, Illinois, and in the Waterloo field in northern Monroe County a few miles south of the Dupo field. The Dupo field, discovered in 1928, is located on the Waterloo anticline which has a north-south trend and extends from St. Louis, Missouri, to Waterloo, Illinois. The Dupo field was developed rapidly and town lot drilling at the north end of the field hastened the decline of the wells. A few extensions have been drilled recently on the east side of the field and there is considerable interest in the possibilities of other extension wells. The Waterloo field, discovered 8 years prior to the Dupo, was abandoned in 1930. During the recent development in Illinois there has been a revived interest in the field and a small producer was completed in April, 1939. Production in both of the fields is from the porous upper part of the light brown, crystalline limestone. The wells are usually drilled from 40 to 50 feet in the limestone.

St. Peter Sandstone

The St. Peter sandstone of Ordovician age, corresponding in part to the Wilcox sand of Oklahoma, is a potential oil formation. In general the sand in Illinois is thick-bedded, homogeneous, and very pure. The sand is composed of loosely cemented, well-rounded grains and has high porosity and permeability. The average thickness of the sandstone is about 200 feet in the northern part of the state, but locally it ranges from 120 to 599 feet. The sandstone is present over nearly the entire state but crops out only in central northern Illinois and along the Mississippi River north of the Cap au Gres fault in Calhoun County. In northern and western Illinois it is an important water-bearing formation, yielding water for domestic use. The total dissolved minerals are from 1 to 3 thousand parts per million in this area. Toward the deep part of the Illinois Basin the water shows an increasing concentration of dissolved minerals. This is slightly encouraging to the possibilities of St. Peter oil production in the central basin area. The sandstone has been tested around the margin of the deep part of the basin and on closed domes on the LaSalle anticline but it has not been productive. A petroleum residue has been noted in 20-60 feet of cable tool drill cuttings from three widely separated wells in the Joachim dolomitic limestone which overlies the St. Peter sandstone. The first well in which it was noted was the Forester-Fee 1, Section 5-6s-1w, Perry County; later similar material was found in the Kunz 1, Section 11-6n-5w, Bond County, and in the Dotey 1, Section 8-17n-6e, Bureau County. This occurrence is of special interest in considering possible source beds for oil accumulation in the sandstone. A test well is being drilled to the St. Peter by Kingwood Oil Company in Section 15-6n-6e, Effingham County. This well is the first attempt to drill to the St. Peter in the deep basin area. In the deepest part of the Illinois Basin the estimated depth to the top of the sand is 8000 feet.

Conclusion

In view of the evidence presented above, the Devonian-Silurian limestone appears to have good possibilities of oil production on favorable structures in the Illinois Basin; the "Trenton" has fair possibilities if it is porous enough; and the St. Peter sandstone although it has the characteristics of an excellent reservoir rock, has not yet been demonstrated to be oil bearing in the basin.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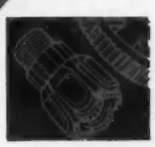
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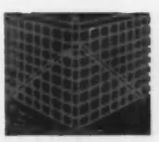
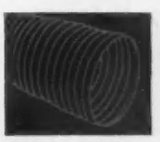

REPUBLIC WOVEN WIRE FENCING BARBED WIRE AND STEEL FENCE POSTS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Illinois Reserves Reach Half Million Barrels

Of the 461,810,000 barrels uncovered by current campaign 40,112,385 barrels have been produced, leaving 421,767,615 barrels for future recovery.

By GRADY TRIPLETT, Staff Writer

AN estimated ultimate yield of 461,810,000 barrels of crude oil has been discovered in the new development in Illinois. Since the fields, on May 1, had produced 40,112,385 barrels of this volume, there remained a future recoverable reserve of 421,112,385 barrels at the time.

However, the state is certain to produce considerably more than these figures indicate. Many of the more recently discovered fields have not as yet had such development to permit calculation of their ultimate output, and will swell the present totals considerably although none of them at this time appear exceptionally large.

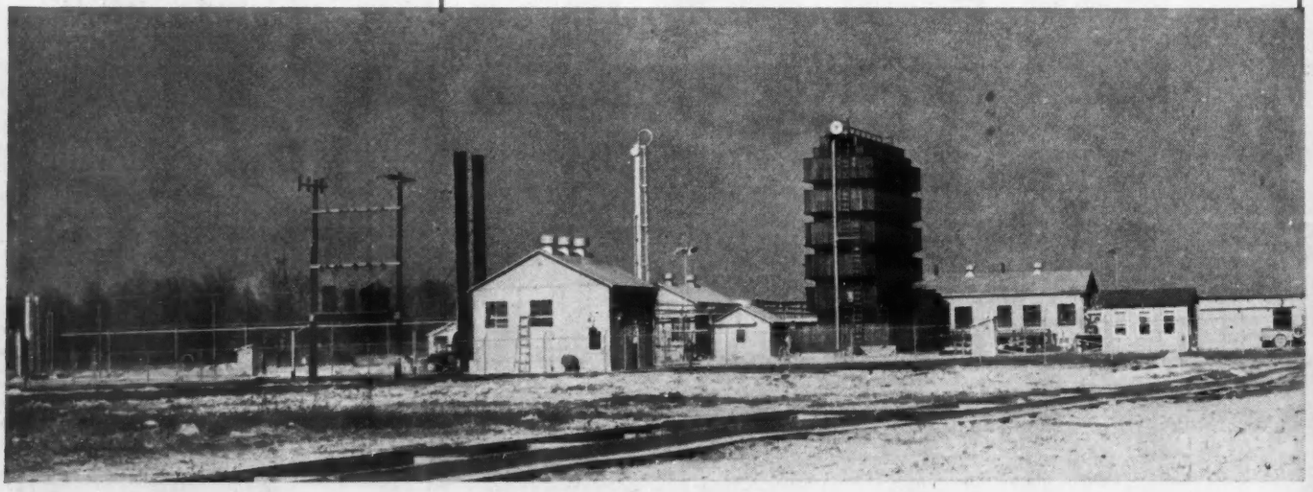
The above figures are 150,000,000 barrels higher than calculations made in November, 1938. Chiefly responsible for this increase is the development of the Salem field, to which 1000 acres have been added. This field now has 9700 acres proven, and sufficient development has taken place in the McClosky lime to assure that its saturation extends over this area.

High Yield

Salem is the richest per-acre oil deposit to be uncovered in the Illinois Basin. In calculating its reserve of 183,250,000 barrels, 100,000,000 barrels have been credited to the Bethel sand, 70,000,000 barrels to the McClosky lime and 13,250,000 barrels to the Aux Vases sand. These figures exceed what can be credited to these formations in other fields because of thickness of the saturation in both the Bethel sand and the McClosky lime. The Bethel sand is credited with 42 feet of saturation and the McClosky lime is credited with 22 feet of saturation. Too little drilling into the Aux Vases sand has been done to allow accurate calculation of its saturation but indications are that its thickness will exceed 30 feet and that its area will cover at least 8000 acres.

When finally defined, it seems

Recovery in both the Loudon and Salem fields, the most prolific discoveries in Illinois, will be stimulated by pressure maintenance operations. These two pools are estimated to have 319,089,600 barrels of the remaining known 421,767,615 barrels in the state. The gasoline plant of The Texas Company, shown below, will be used for pressure maintenance in the Salem field.



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Foot bridge on the Chitwood lease of Magnolia Petroleum Company in the Salem field. It saves three miles of walking in wet weather. The pull rods serve as one guard for the pedestrian.

safe to credit Salem with 10,000 acres. On this basis the field will have to produce 18,350 barrels per acre to come to depletion with 183,250,000 barrels of oil produced. Such recovery is higher than that credited to any other Illinois field. But Salem is the only new field favored with three formations from which to draw production and in addition it has thicker zones of saturation than any other new field. In a few instances the older Illinois fields along the LaSalle anticline had spots of similar saturation and recovery of as high as 40,000 barrels per acre has been taken from these limited areas. In the light of what has been produced under similar conditions, it is reasonable to expect high output from Salem as a whole.

The increase in the reserve estimate for the Loudon field is due chiefly to development in the Paint Creek stray sand, an inconsistent member of the Chester series between the Cypress and the Bethel sands. This formation is being put under the pressure maintenance program under which most of this field will be operated. This program of returning the gas to the sands in the early stages of development is another reason for crediting Loudon with upward revision in recovery.

Recent Discoveries

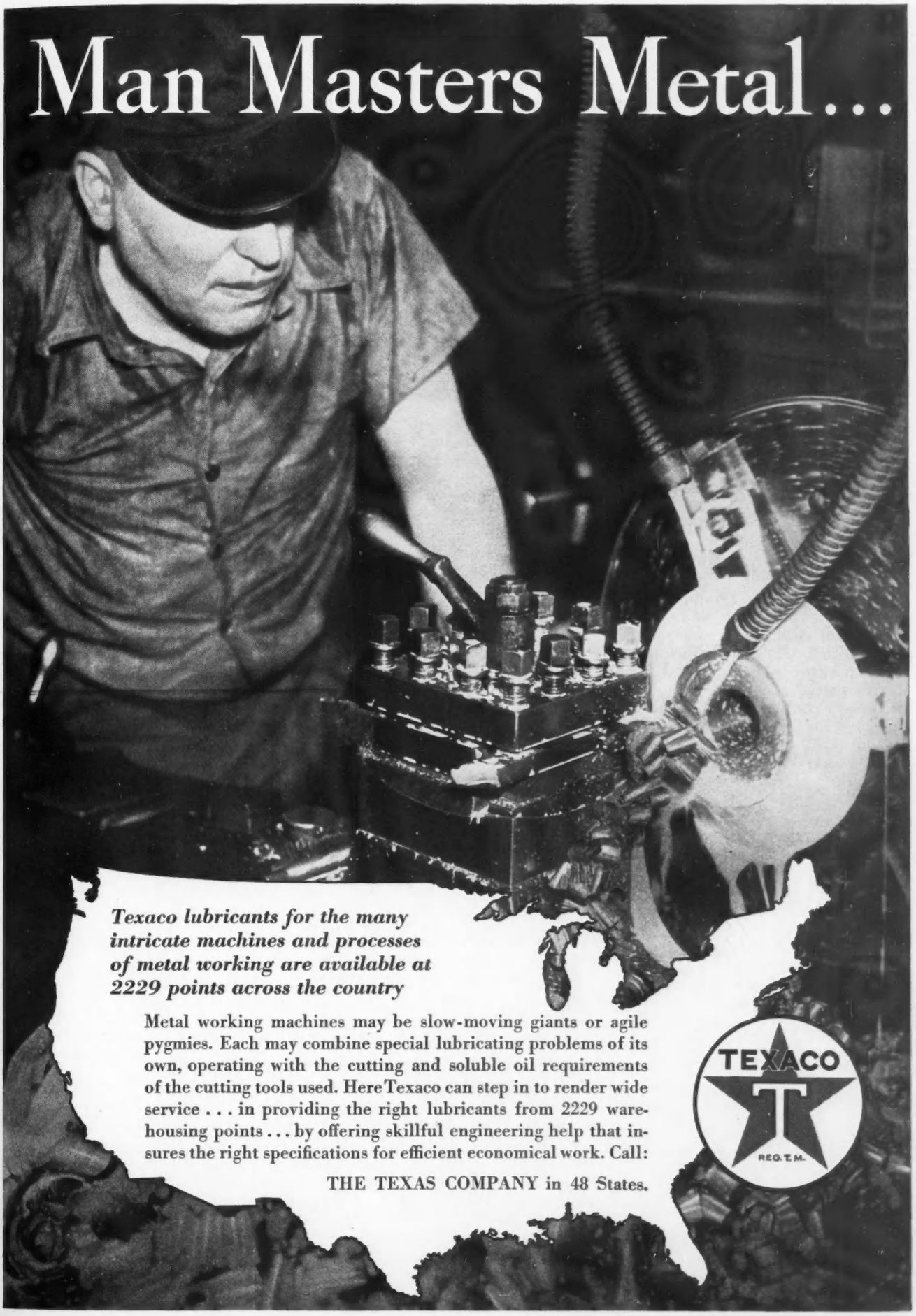
Other sources of the reserve estimate come from discoveries of the last two months of 1938 and those of the first four months of 1939 as well as further development of fields, which had only limited development in 1938. Discoveries have been numerous but the fields found in the last six months have not been large. The Noble North pool, a Cypress sand development, the Cordes pool and the Enterprise pool are foremost in discoveries. Of the three, Noble North and Enterprise promise most. Recent development has reduced the first estimate of the size of Cordes. Enterprise looks like a discovery to compare with the previously dis-

Illinois Crude Reserves In New Fields

FIELD AND COUNTY	Discovery Date	Producing Formation	Average Depth	Proven Acres	Wells Producing	Wells Flowing	Wells Pumping	Wells Drilling	Wells To Be Drilled †	Estimated Ultimate Yield	Produced to May 1, 1939	Remaining Reserve
Aden-Wayne	2-11-39	McClosky	3,290	400	5	...	5	4	12	2,000,000	9,760	1,990,240
Aden, North-Wayne	7-26-38	McClosky	3,345	1,000	43	11	32	5	20	6,500,000	463,800	6,036,200
Barnhill-Wayne	2- 7-39	McClosky	3,410	50	2	...	2	3	5	50,000	3,900	46,100
Boyleston-Wayne	12-13-39	McClosky	3,260	250	3	...	3	2	10	1,125,000	1,875	1,123,125
Centralia-Clinton	11-30-37	Cypress & Bethel	1,410	1,800	558	...	558	2	25	9,800,000	3,650,000	6,150,000
Cisne-Wayne	3- 7-37	McClosky	3,155	1,000	44	12	32	2	10	7,340,000	1,103,200	6,236,200
Clay City-Clay	3 -4-37	McClosky	2,975	2,700	249	...	249	19	60	29,140,000	6,791,000	22,349,000
Cordes-Washington	2- 7-39	Bethel	1,290	640	12	...	12	17	60	2,400,000	45,000	2,355,000
Dix-Jefferson	1- 2-38	Bethel	1,950	1,000	42	...	42	2	10	5,720,000	427,000	5,239,000
Elk Prairie-Jefferson	1-28-38	McClosky	2,755	50	1	...	1	...	.....	50,000	700	49,300
Enterprise-Wayne	2-28-39	McClosky	3,125	1,000	4	2	2	11	35	5,000,000	5,600	4,944,400
Flora-Clay	6-22-39	McClosky	2,990	700	12	2	10	3	40	3,125,000	85,000	3,040,000
Flora, East-Clay	7-19-39	McClosky	2,970	100	1	...	1	1	5	500,000	27,250	475,750
Golden Gate-Jefferson	3- 7-39	McClosky	3,440	10	1	...	1	...	.....	20,000	.....	20,000
Ina-Jefferson	6- 8-38	McClosky	3,310	100	1	...	1	...	4	100,000	14,500	85,500
Iola-Clay	4-10-39	Aux Vases	2,330	10	1	...	1	1	.....	25,000	.....	25,000
Leech-Wayne	9-14-38	McClosky	3,435	200	2	...	2	2	7	300,000	24,400	275,600
Loudon-Fayette	12-31-37	Cypress & Bethel	1,650	17,320	671	142	529	109	700	165,000,000	6,798,900	158,201,100
Marcoe-Jefferson	12-24-38	McClosky	2,765	100	1	...	1	...	10	500,000	.....	500,000
Mattoon-Coles	2-21-39	Cypress	1,845	10	1	...	1	...	.....	.....	.....	.....
Mt. Erie-Wayne	12-31-38	McClosky	3,090	40	1	...	1	...	.....	100,000	3,000	97,000
Noble-Richland	8-27-37	McClosky	3,000	3,200	124	...	124	...	.....	15,500,000	5,365,000	10,135,000
Noble, North-Richland	11-11-38	Cypress	2,580	1,000	14	...	14	12	85	5,720,000	261,000	5,459,000
Noble, South-Richland	2-22-38	McClosky	3,060	400	10	...	10	...	.....	2,500,000	240,500	2,159,500
Olney-Richland	2-16-38	McClosky	3,050	1,500	32	...	32	6	20	6,915,000	589,000	6,326,000
Patoka-Marion	1-27-37	Bethel	1,420	800	103	...	103	...	.....	3,250,000	1,262,000	1,998,000
Rinard-Wayne	10- 3-37	McClosky	3,150	Abandoned		...	...	...	.....	.....	5,500	Abandoned
Roaches-Jefferson	11-28-38	McClosky	2,235	100	2	...	2	...	.....	.....	150,000	150,000
Salem-Marion	6- 6-38	Bethel, Aux Vases	1,875									
		McClosky	2,050	9,800	742	119	623	91	1,300	183,250,000	12,361,500	160,888,500
St. James-Fayette	9-20-38	Cypress	1,635	650	32	...	32	2	20	5,300,000	180,200	5,111,800
Schnell-Richland	6-21-38	McClosky	2,990	100	4	...	4	...	.....	400,000	110,000	290,000
Stewardson-Shelby	4-16-39	Bethel	1,935	50	1	...	1	...	4	150,000	.....	150,000
Wildcats	.....	.....	.....	.....	.....	...	...	126	500*	.....	.....	.....
TOTALS				46,130	2,720	288	2,432	422	2,942	461,810,000	40,112,385	421,767,615

* The total for wildcat drilling is an estimate on requirements for two years only.
† Includes only undrilled locations in already proven areas.

Man Masters Metal...



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covered large McClosky fields. Noble North promises to exceed the 1000 acres credited to it in this estimate of reserves. The Aden North pool is another that has come into larger area through recent development and may be further enlarged before it is defined.

This estimate in excess of 400,000,000 barrels for the discoveries since 1936 in the Illinois Basin places the state in the billion-barrel ultimate yield class, since its older fields have produced in excess of 400,000,000 barrels and are still making 8000 barrels daily. It is beyond expectation to anticipate as much as 80,000,000 barrels additional from these older fields, some of which are 25 years old. These old fields, however, are yet to undergo secondary recovery efforts, a possibility that can not be ignored in considering additional recovery for Illinois.

If and When

It is the new fields, however, which promise to give up more oil than the 461,810,000 barrels now calculated. The possibility lies in the Salem and the Loudon fields. In the case of Salem it will require methods stimulating recovery from the McClosky lime. This formation is known to contain more oil than its calculated recovery. Whenever secondary recovery by either flooding or repressuring in a lime formation makes progress, the recovery at Salem will be increased substantially. In addition to this possibility, there is likelihood that Salem will have more than 9700 acres when finally drilled out. This acreage is based on recent contours and is a conservative estimate of area. Any change in proven area will be a higher total.

Loudon certainly will be larger than the 17,320 acres credited to it in the estimate of 165,000,000 barrels. It will take drilling to outline the area of Loudon and a total in excess of 20,000 acres is within expectation. In addition to anticipated increase in area the Loudon field will get the benefit of a well planned pressure maintenance program, now being provided, and it will get the benefit of whatever knowledge comes from introduction and operation of this program.

New Fields

The factor that defies calculation, and yet must have consideration, in determination of reserves in Illinois is the 16 oil fields, which have 5 or fewer producing wells. Of the 16 fields, only one has 5 wells, 2 have 4 wells, 1 has 3 wells, 3 have 2 wells and 9 have but one well each. The 16 have been discovered since 1938, 4 being added in that year and 12 in 1939.

Certainly the 12 discoveries of 1939 have not had sufficient development to permit calculation of reserves.

Out of this list of recent discoveries, it seems logical to expect sufficient addition to reserves to bring final recovery of the new fields within the Illinois Basin to surpass 500,000,000 barrels, an output sufficient to bring the state to 1,000,000,000 barrels of ultimate recovery.

Indiana Reserves

By comparison with the Illinois part of the Central Coal Basin, Indiana has had but little oil added to reserves in the development program since 1936.

The southern part of the state, however, in the parlance of the industry, is "leased solid," and the summer of 1939 will see it under its most active wildcatting campaign. The number of wildcat tests to be drilled this year is estimated as low as 60 and as high as 100.

A significant part of the effort to gain production in southern Indiana is the return of the checkerboard method of gaining protection. Several large oil companies failed to gain production in the Illinois development. In most instances these concerns came into the area one or two years after the geophysical exploration was begun. These concerns have selected Indiana as the next opportunity for adding to reserves in the area east of the Mississippi River. The area has been shot thoroughly, still this has not satisfied the desire to gain production and the checkerboard style of acquiring acreage has been added to that of preliminary search for structures.

Although it has had little development, the Griffin field, Gibson County, is considered the best discovery in Indiana. The discovery well was near the Wabash River. It came in in December 1938 and from that time until flood waters receded in April, the area was either under water or well nigh inaccessible on account of mud.

The Heusler field, west of Evansville, headquarters for the Indiana development program, has had more development than any other strike of the current campaign. It is held largely by Sun Oil Company and is being drilled slowly.

A similar condition exists in the Prairie Creek field, Vigo County, where Carter Oil Company made the discovery in August, 1937.

With the exception of the Griffin field, where production is from the McClosky lime, the Indiana discoveries have been consistent with Illinois as to source of oil. The Heusler field is producing from the Waltersburg sand, a member of the Chester series. Prairie Creek is producing from the Devonian.

The possibility of Cypress sand production in the Griffin field was indicated in May by the test of W. F. Lacy, Cooper 1, NW SW SW 18-3s-13w, a well which plugged back after finding the McClosky lime dry. The field has four wells producing from the McClosky lime. As soon as pipe line is completed the field will go into production.

Kentucky Reserves

Kentucky, one of the older producing states, had its revival with the discovery of the Birk City pool in April, 1938. Since then discoveries have been numerous enough to keep interest alive and wildcatting at a satisfactory basis but the structures have been small with the result that the state as a whole has added but little to its reserves.

An interesting sidelight on Kentucky is the fact that it had oil production prior to the discovery of oil in Pennsylvania. Efforts to get brine wells, a development that preceded the drilling for oil on the banks of oil creek in Pennsylvania, resulted in oil being discovered in McCreary County in 1919. Ten years later another well in Cumberland County became an oil producer.

Neither of these wells was ever produced since oil was not the objective. The second well became known as "The Great American Well" and part of its output was sold for medicinal purposes.

Action of the discovery well at Birk City is characteristic of what has happened in other discoveries. The well flowed natural at 1000 barrels daily after drilling only one foot into the McClosky lime. It flowed for four weeks and went dead. Later wells failed to flow and many of them had to be acid treated in order to get pumping production.

Recently the field, which has spread into Henderson County across Green River, has added the Jett sand as a source of oil.

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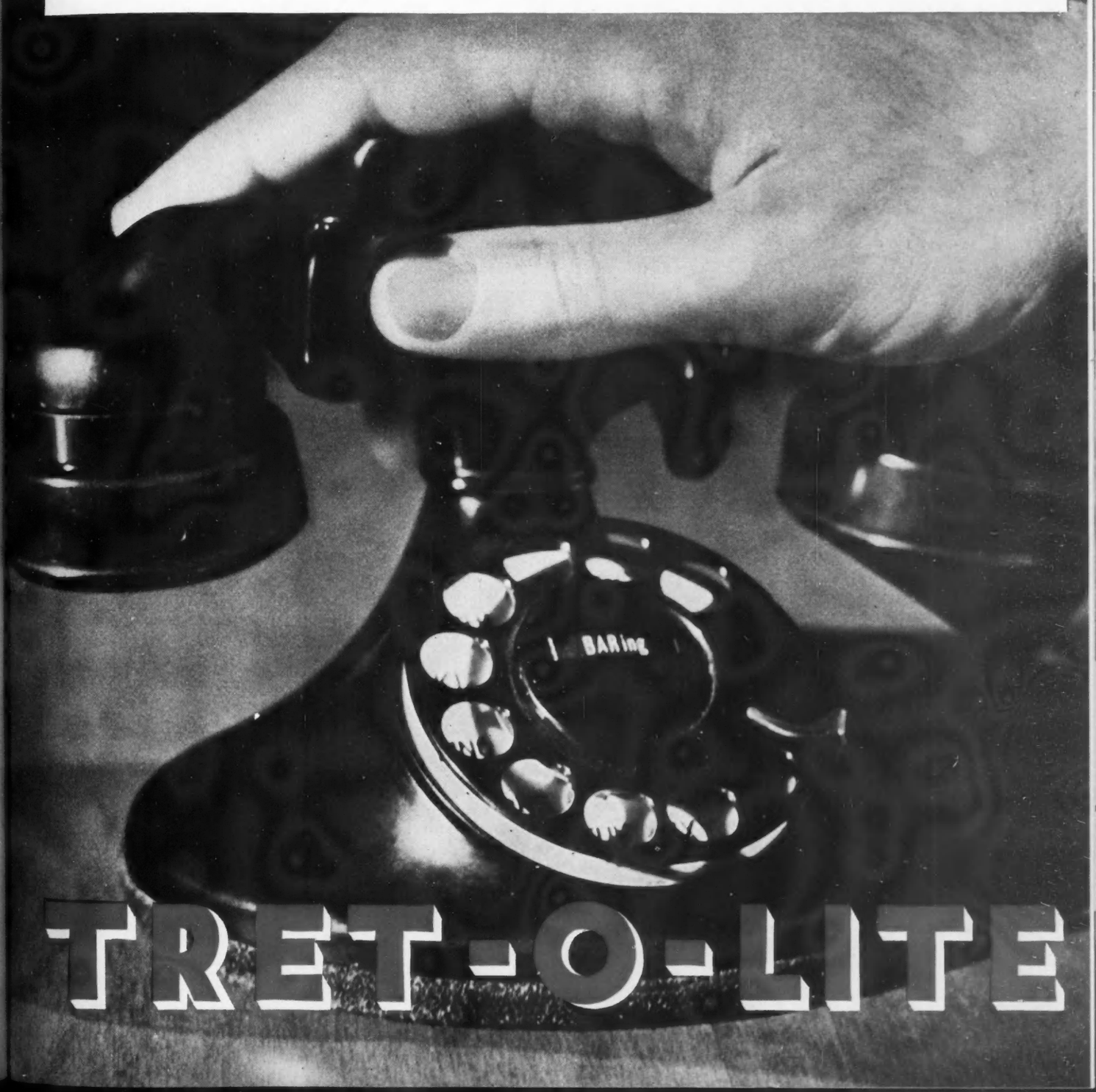
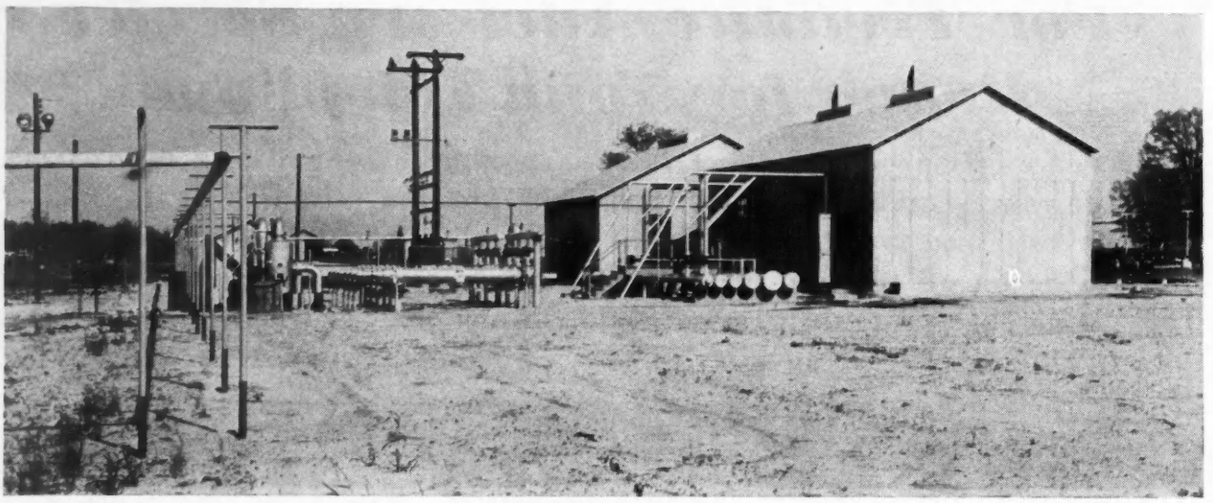




General view of The Carter Oil Company's gas compressor plant in the Loudon field. Main units housed in nearest structure, auxiliary in house immediately behind this one. Manifolds to left of main engine room, with gasoline extractors and accumulators further to left.

Extensive Gas Conservation Underway in Loudon

By FRANK B. TAYLOR, Staff Writer

AS a first step in an extensive gas injection program, The Carter Oil Company has constructed and placed in operation a compressor plant near the north end of the Loudon field, Fayette County, Illinois. Gas produced with the crude is gathered from wells in the vicinity, repressured, and injected into the producing horizons. The present system is merely the nucleus of an enlarged project for the future and although some expansion is to be undertaken immediately, the complete program will be carried out only as field development and local conditions warrant.

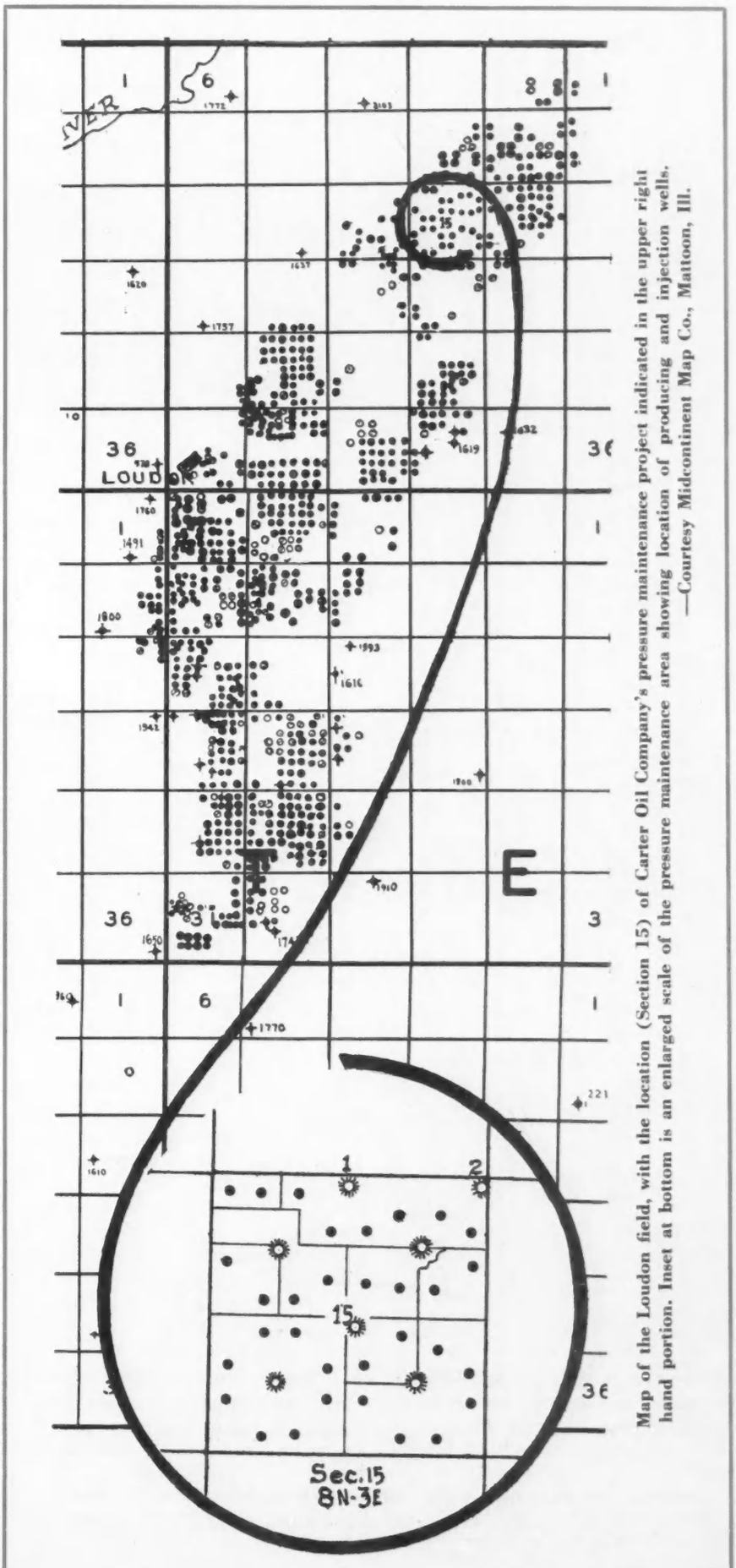
The project is strictly one of returning excess gas to the pay strata, which are still at relatively high pressures. By this means the pressure decline accompanying normal production will be arrested materially, the object not being to return it to the initial reservoir pressure. The control of sand conditions in this manner is expected to stabilize productive conditions of the reservoir to such an extent that the greatest ultimate recovery will be obtained at an economic operating cost.

Field Has 20,000 Acres

Loudon contains 17,320 proven acres with 23,000 acres within the assumed productive limits of the field. Total reserve is estimated at 165,000,000 barrels with production to May 1 set at 6,798,900 barrels, leaving 158,201,100 barrels in the reservoir. This reserve is expected to be increased by subsequent drilling for although the field is bounded by non-commercial wells, a limited expansion of the present area will result through normal development. The structure is an anticlinal dome with an uneven water contact down on the flanks, as yet not positively established.

Pay strata underlying the present injection program are the Weiler and the Paint Creek, called the Stray by many field men; the Benoist, producing farther to the south, not being present in this sector of the field. Both the Weiler and the Paint Creek, Upper Mississippian, are known by a number of terms. At a later date, as the program progresses it is planned to

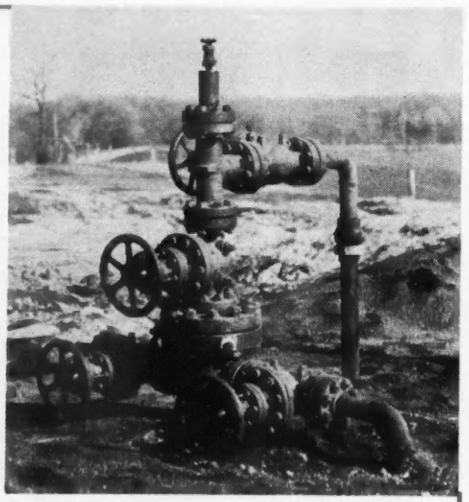
Project Field

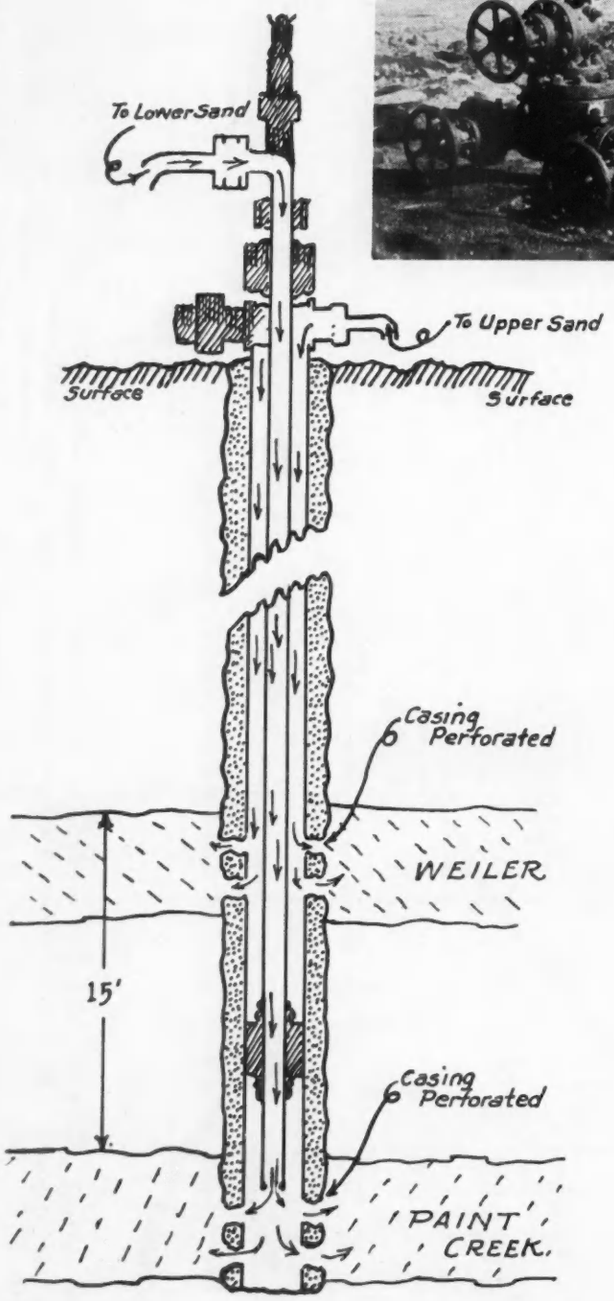


Map of the Loudon field, with the location (Section 15) of Carter Oil Company's pressure maintenance project indicated in the upper right hand portion. Inset at bottom is an enlarged scale of the pressure maintenance area showing location of producing and injection wells.
—Courtesy Midcontinent Map Co., Mattoon, Ill.

inject into Weiler, Paint Creek and Benoist through the same well where these three sands are present. Weiler sand is found at a mean depth of 1515 feet, Paint Creek at 1550 feet. The thickness of the former averages 25 feet, the latter, 17 feet. Benoist sand averages 20 feet in thickness. Discovery pressure in Weiler was gauged at 635 pounds per square inch and in Paint Creek at 650 pounds.

Characteristics of each of the pay strata are similar. The porosity of all three has been determined at 19 percent. Permeability ranges from zero to a high between 600 and 700, with an average close to 90 millidarcies. Water content of the sands is 30 percent, residual saturation 22 percent. The pays are shale





An effective arrangement for introducing repressured gas into two pay horizons in the Loudon field is shown in the accompanying drawing. A packer separates the two sands. Gas is returned through tubing into the lower (Paint Creek) formation, and through casing into the upper (Weiler) sand.

Volumes are controlled at the well head of the injection wells, one of which is showing in the photograph.

streaked and erratic, necessitating careful consideration in preparation of injection wells.

Plan of Program

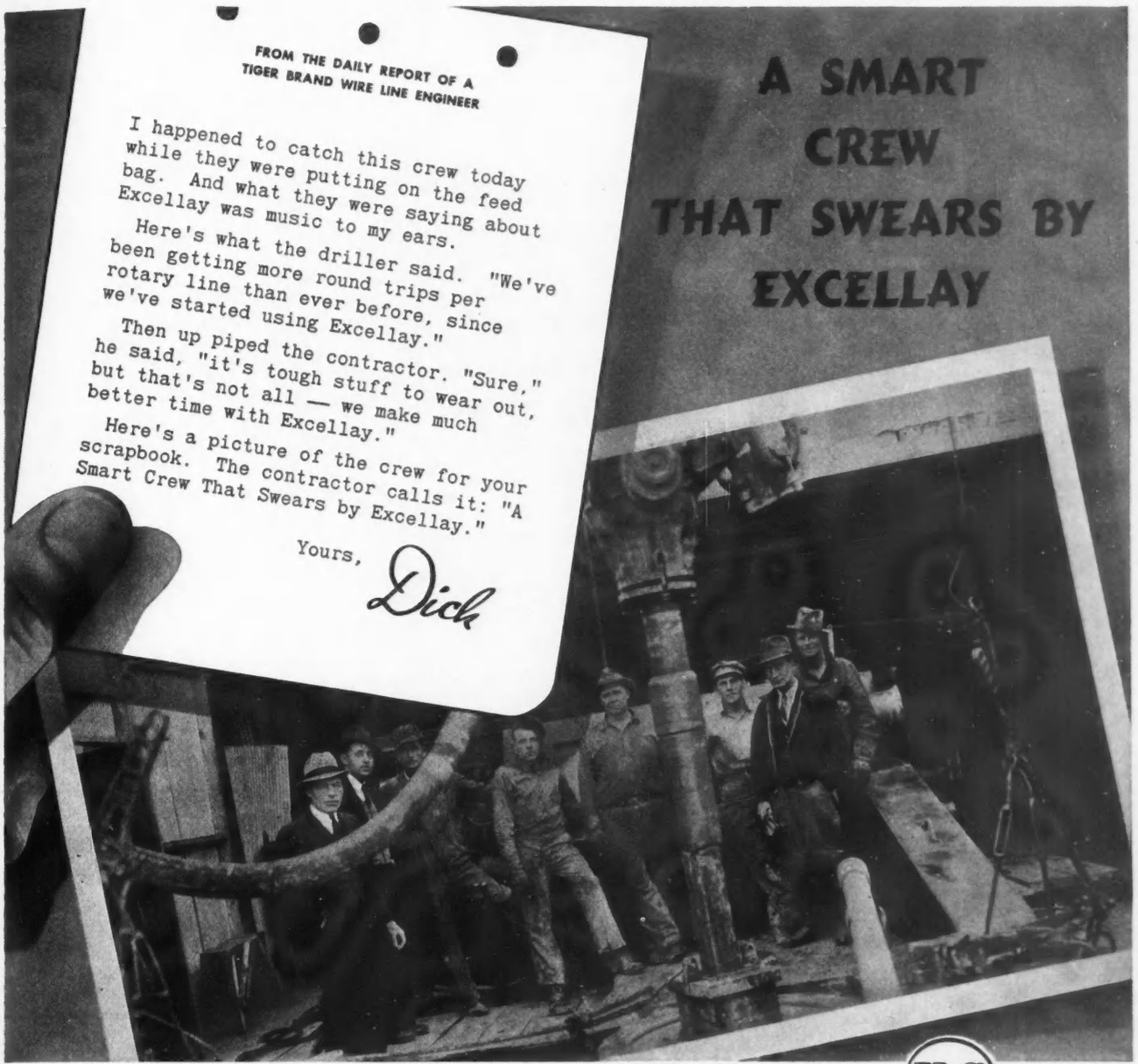
At present only five wells are serving for injection, these being in Section 15-8n-3e. They are located with one at the center of the section and one each near the centers of the four quarters. In this manner the injection is becoming effective over 640 acres.

The pattern of the producers follows the Schuler (Arkansas) plan with two wells centering 10 acres on each of the four lines of the quarter-section. The plan is similar to the seven-spot development used extensively in the water flood areas near Bradford and in New York, but with two additional wells added to the circle of six producers, to give the Carter project a nine-spot development with eight producers. It is planned to continue this pattern throughout the program, although prior drilling and the necessity of incorporating off-pattern wells into the project, will vary a strict nine-spot application. Each quarter-section considered as an individual injection project finds an injection well at the center, 1320 feet from each line. Producers are located two to a side, 330 feet in from the line of the quarter-section, 990 feet from the corners, and 700 feet apart.

At present the concern is extending the system, adding six more injection wells to expand the effective area.

Input volumes have been increased in the initial tract, and will be raised steadily as development progresses. Wells will be equipped to take gas into either two or three formations, if present, through tubing and casing, injected volumes being controlled from the surface. Casing will be run through the lower pay formation, as was done in the last completed injection well; cemented, and perforated opposite the strata taking the pressured gas. Packers will be used between pays. As the pay sands are tight in some sections of the field, it may be that it will be necessary to shoot prior to injection, in which case casing will be set on the pay rather than through it. The additional acreage now being added to the project is in Sections 10, 11 and 14. From this start the project will be developed to the south. The operator is contemplating a second plant more centrally located in the field.

To May 1, 1939, approximately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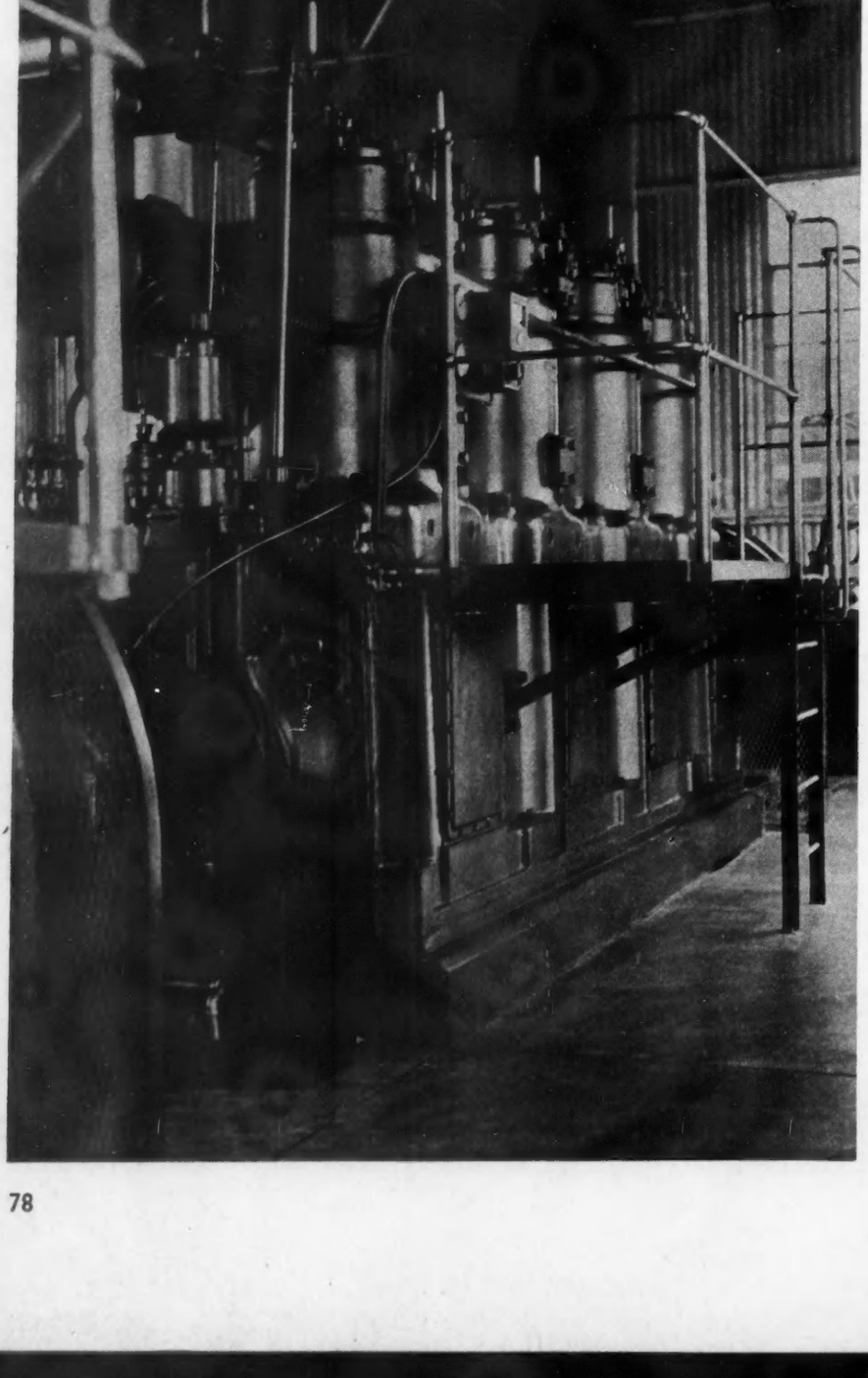
19,000,000 cubic feet of gas were returned to the sands, with volumes up during the latter weeks. Both formations take the injected gas about the same, although each sand varies in different wells. The volumes injected, and the ability of the pay to carry off the gas, determines the injection pressures. A check shows the Paint Creek to be averaging 630 pounds injection pressure and the Weiler 770 pounds for one month.

With prospective expansion, the operator expects at this early stage of the field development, to eliminate the dissolution of entrained gas as energy within the crude in place. This will limit the repressuring function to one of stabilization of energy, assuring a high ultimate recovery. Although injection has not been applied for a time sufficient to show a formation pressure increase, the ability of the sand to take the gas indicates a practical development. The Carter Oil Company, pioneer in repressuring and pressure maintenance, holds 80 percent of the productive acreage of Loudon, and looks to an extensive injection system from their initial start.

Gas for the project is being taken from producers, with an average present gas/oil ratio of 380 cubic feet per barrel. Crude in all three pays is 38.5 degrees API gravity. Gas was started into the pays in early December with only small volumes being injected, these volumes being stepped up during the past two months. The accompanying plat shows wells 1 and 2 as part of the immediately planned expansion.

The angle type compressing units are equipped with four cylinder, vertical powers delivering 300 horsepower at 300 RPM. Power ends are direct connected to horizontal compressor cylinders.



Repressuring—Plant and Equipment

The compressor plant has a daily capacity of 2,500,000 feet, pulling about three inches of vacuum on suction lines from the field gathering system. Plant discharge is varied to meet volume conditions, with pressures exceeding 750 pounds carried in injection lines. To date, the equipment has not been loaded to full capacity. Gas is three staged in compressors directly connected to power ends. High-pressure gas from the plant is injected into the wells through a dual hook-up at the well head, with volumes into casing and tubing individually metered and controlled. The plant is located in the northwest quarter of Section 15.

Main compressor units at the plant are of the angle design, compressor cylinders horizontal and power ends vertical. Two units are installed at this time. The power ends are four cylinder, each 12 x 14 inches, delivering 300 horsepower at 300 rpm. Lubrication to both the power ends and the compressors is by means of pressure lubricators mounted on the main engines. Ignition is by magneto. Also mounted on the main units are sight indicators, and oil pressure gauge, tachometer and a manually controlled temperature indicator for determining temperature of individual exhausts. Automatic mercury circuit breakers are installed to protect the units against excessive RPM and interrupted oil or water supply.

Three compressors are directly connected to each of the power ends. These compress at low, intermediate, and high stages, with the low pressure cylinder designed to pull a maximum of 10 inches vacuum. Compressor cylinders are equipped with by-pass and unloaders. The low stage, 23 x 14 inches, puts the gas through about 4 compressions; intermediate compressors, 13.5 x 20 inches through five compressions; and the high pressure cylinders, 6.25 x 20 inches, through three compressions, giving

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Gives TRIPLE SERVICE Because

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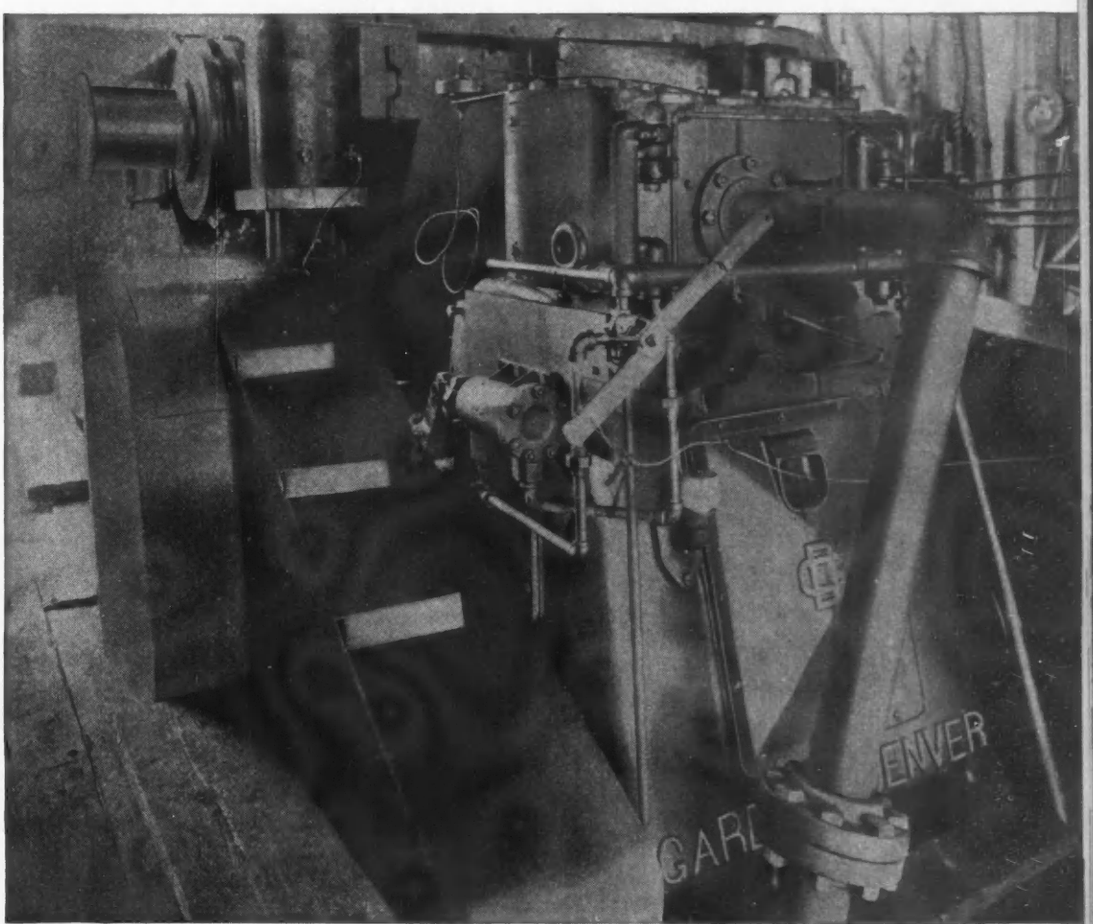

USED for rotary table drive, as an efficient stand-by unit for emergency hoisting and for operation of the sand reel, this Gardner-Denver DEX Vertical Twin-Cylinder Steam Drilling Engine is giving the fullest measure of service to its owner—a Mid-Continent producer. So satisfactory have Gardner-Denver Drilling Engines proved for this operator that the present machine is the fifth consecutive drilling engine that this one company has ordered. The unit shown was used in drilling several wells on which it went to the full depth, and the operators plan on using it to a depth of 12,000 feet as an emergency unit.

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CONDENSED SPECIFICATIONS

Cylinders (two), bore x stroke ..... (inches)	8 x 8	9½ x 8
Nominal Horsepower at 350 RPM with 375 lbs. per sq. in. manifold pressure and 63 per cent cut-off ..... (Horsepower)	310	
Nominal Horsepower at 350 RPM with 300 lbs. per sq. in. manifold pressure and 63 per cent cut-off ..... (Horsepower)	225	330
Nominal Horsepower at 350 RPM with 225 lbs. per sq. in. manifold pressure and 63 per cent cut-off ..... (Horsepower)	185	250
Maximum steam pressure ..... (lbs. per sq. in.)	350	300
Weight Complete Engine with Flywheel: Mounted on wood skids ..... (Pounds)	7200	7400
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Horsepower ratings are for drilling service. Regarding mud pumps, shorter cut-offs should be used to obtain steam economy.

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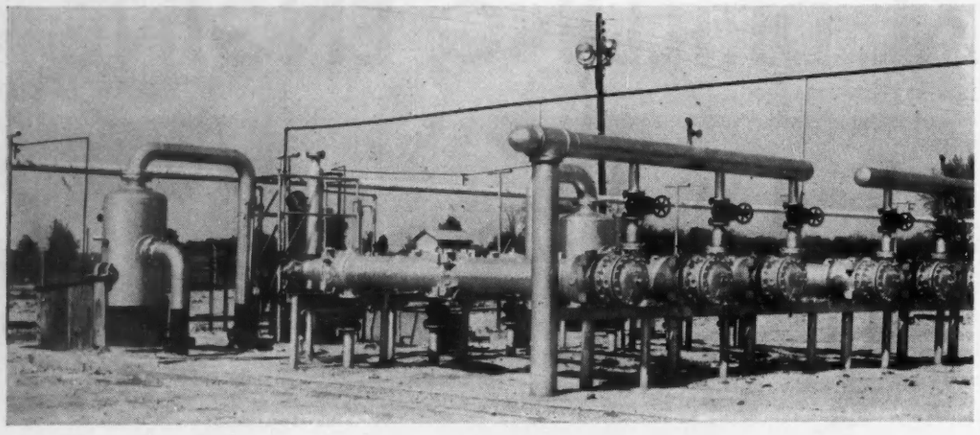


Tubular coolers for gas and gasoline extraction between intermediate and high, and low and intermediate stages at Carter Oil Company's Loudon field gas compressor station. Gasoline accumulators at left.

a suction to discharge gain of between 60 and 80 compressions.

Moving equipment in the main engine room, as well as in the auxiliary, is protected by metallic guarding. Steps, with hand rails, lead to the upper section of the power ends. Vapor proof fixtures are used throughout. All controls are readily at hand. The floor of the structure is of color impregnated concrete with grating over pipe breaks in the floor. Also in the main building are control panels mounting recording gauges, vacuum and pressure gauges. Each unit is equipped with air starting and the compressor is housed in the main engine room with the air receivers immediately outside between the main engine room and the auxiliary building.

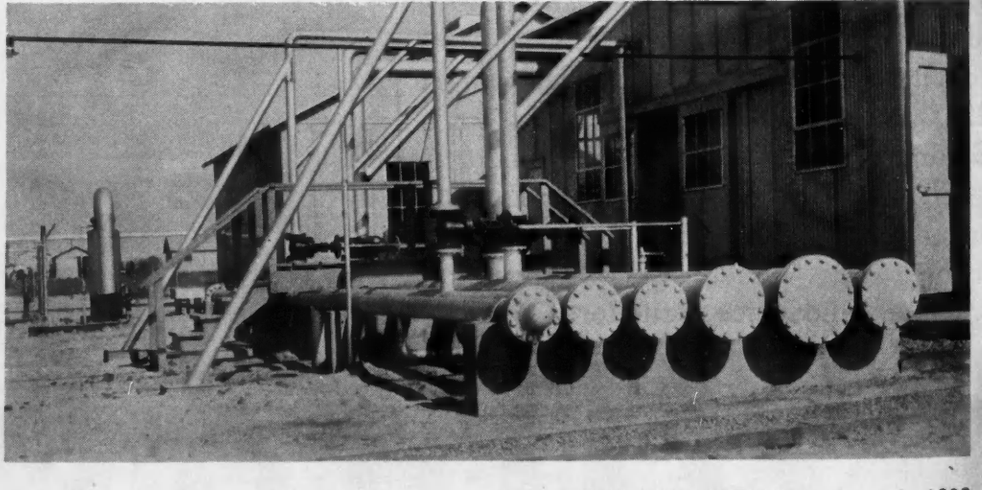
The auxiliary building houses a single power unit rated at 300 horsepower at 400 RPM. The unit is a six cylinder vertical type. This power drives a direct connected alternator and a 7½ KW excitor at 1750 RPM from "V" belts to pulley mount immediately outside the outboard bearing. A power control panel supplying current for the plant and for pumping nearby wells is installed in the auxiliary, meters and regulators being equipped with non-glare glass. The company also has installed two 75-KW on separate pumping systems, these being automatically controlled.

Air for power ends is delivered through oil bath air filters mounted on standpipes. Gas for fuel is measured through an orifice meter and is controlled through a high, intermediate and low pressure regulator manifold system.

All units are jacket water cooled in a closed system. Individual water pumps are mounted on each of the main units. Makeup water is now being obtained from Wolfe Creek and has been found comparatively free of scale forming compounds. However, the water has been heat treated in an insulated boiler on the lease. Dichromate is now being used to treat. It is doubtful if the Wolfe Creek supply would be sufficient for the expansion planned and the firm expects to lay a line to the Kaskaskia River to augment present water supply. This construction, only contemplated at this time, would probably make necessary the installation of a treating system to handle greater volumes of makeup. The plant is using a cooling tower in connection with their present equipment. Two 4-cylinder engines are connected to pumps at the tower, one to lift water over the tower and the other to circulate through combination gasoline condensers and after coolers, and then return it to the tower. Within the tower, the falling water cools the piping carrying jacket water through the closed system.

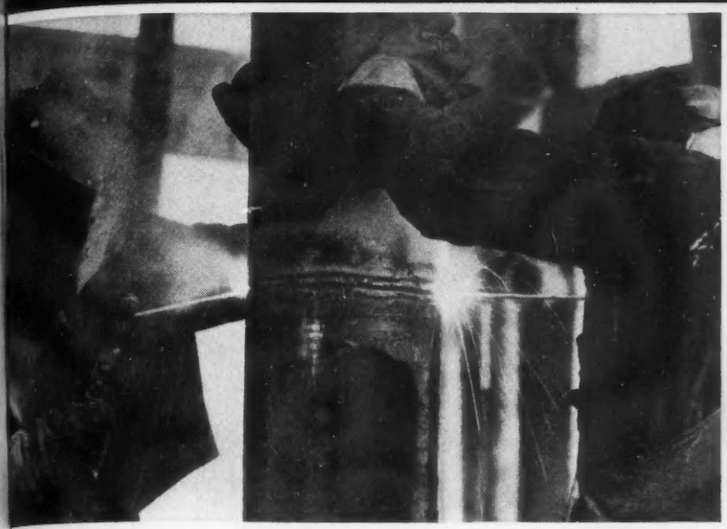
Outside equipment at the plant consists of tubular coolers, gasoline extractor, a bank of three power transformers in the rear of the auxiliary, discharge headers and suction headers. The boiler, serving as a heating unit during cold months, is housed in a separate structure. All buildings are of corrugated, galvanized iron on heavy steel framework. Floodlights are mounted on poles to illuminate the plant.

Some trouble was experienced during the recent cold month due to the formation of hydrates in high pressure discharge lines. The natural gas from the producing wells is relatively rich, and carries considerable water vapor. At low temperature and high pressure the water vapor combined with the heavier fractions of the gas. The extraction of a portion of the gaso-



Manifold arrangement for three-staging gas from producing wells at Loudon. Gas is received at the station under from two to three inches mercury vacuum and discharged at pressures above 700 pounds.

WELD IT AND PROFIT



THE WELL CASING

One of hundreds of installations of *"Shielded-Arc"* casing. A well in California. Advantages: Joints are practically flush with the casing, reducing hole diameter and cutting drilling costs. String is strong and leak-proof. Casing costs are low. Complete details and procedures sent on request.
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THE TOOL JOINTS

"Shielded-Arc" Welding saves the tool joint two ways. It is used to join coupling to pipe to prevent leakage and breakage, and to build up the worn surfaces at the joint. A bulletin is available telling how various companies do this work.
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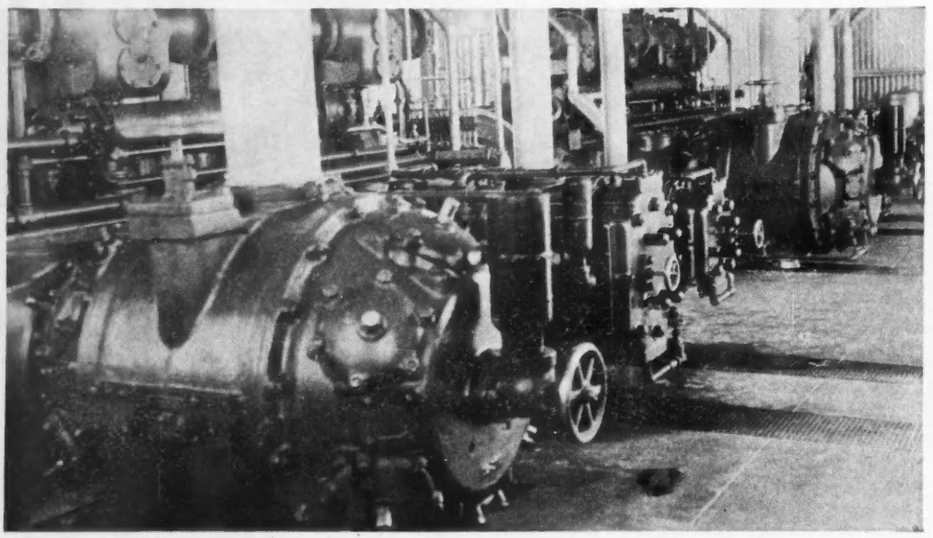


A glance down the compressor ends of the main units in Carter Oil Company's plant. In the immediate left foreground, the low pressure suction cylinder, next the intermediate and beyond the high pressure, outgoing, compressor ends.

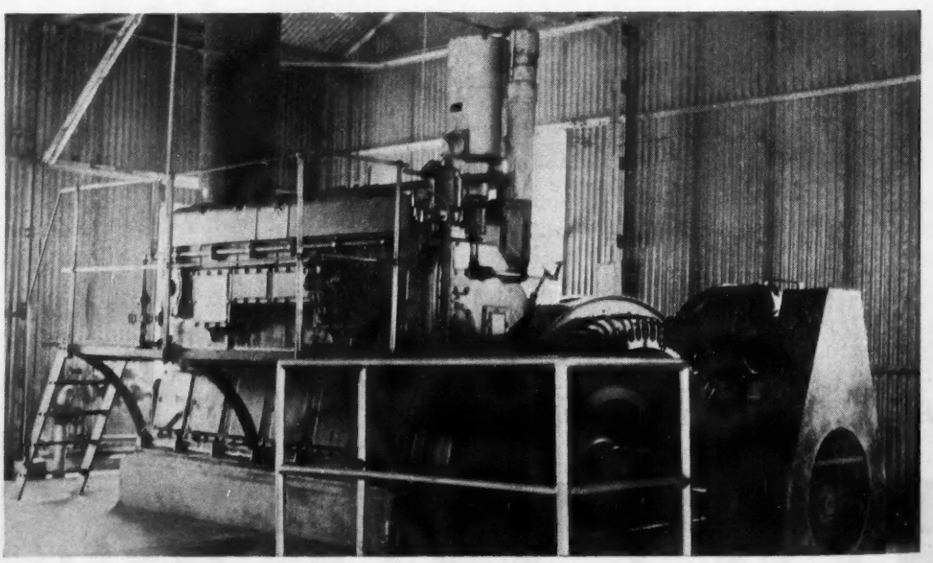
line carried into the plant tended to counteract this reaction, but it was necessary to also use alcohol lubrication and ammonia injection to assure hydrate-free delivery. Special equipment (covered in separate article in this issue) is installed at the plant for this purpose.

Gasoline is condensed in a bank of six, water jacketed, horizontal tubular coolers connected between the low and intermediate and the intermediate and high pressure compressors. The extracted gasoline is weathered in two horizontal storage cylinders with a total capacity of 560 barrels, entering these storage tanks from two 6-foot accumulators, each working off three of the six condensers. The reduction of the gasoline content of gas returned to injection wells, besides eliminating the dangers of hydrate formation, prevents flooding the sands with fluid. In conjunction with this equipment, the firm expects to install a small dehydration or drying unit prior to returning cold weather.

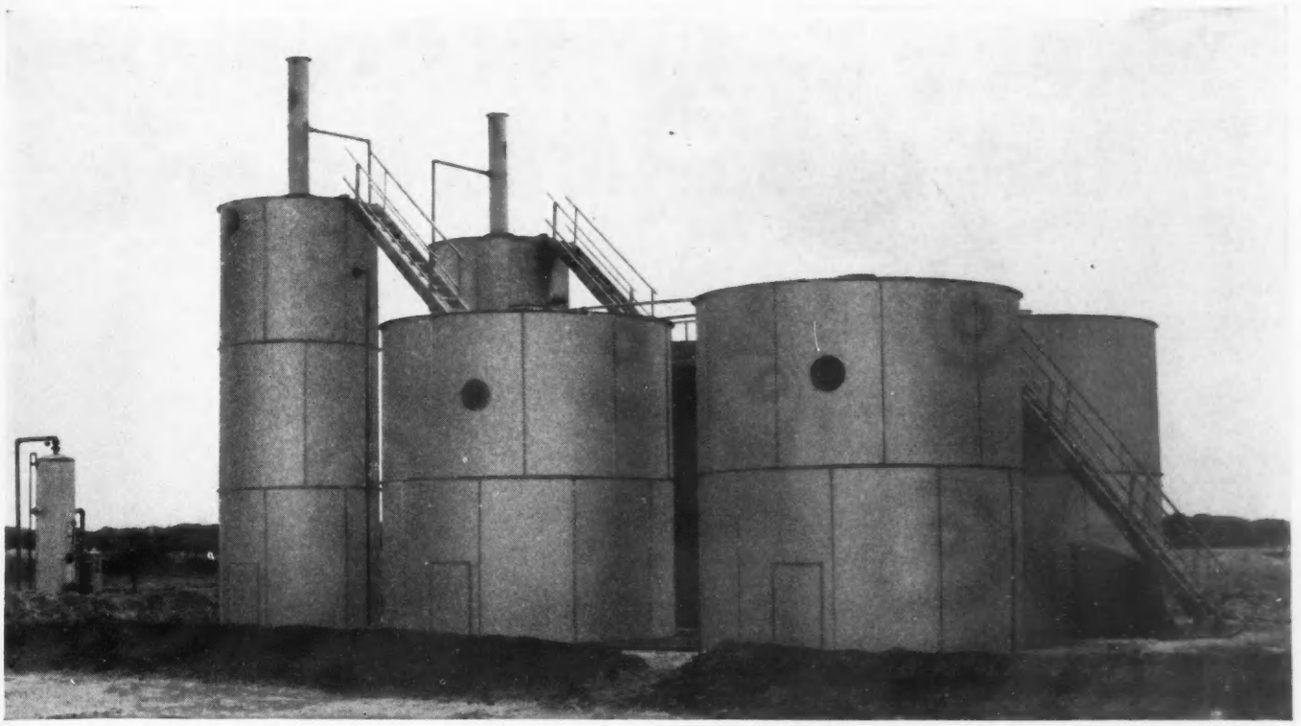
Gas for the project is measured at each well, the volumes being injected individually. This also gives a pressure factor as the pressure of the gas entering the well head is recorded. Orifice meters are used for the purpose. The total of chart calculations gives the daily cubic foot volume of the system. It is planned to increase measuring facilities when the present program is expanded to include more wells, at which time master meters will be installed at the repressuring plant.

Wells in the vicinity of the plant are being pumped with electric power generated in the auxiliary on the plant lease. The power is supplied to unit lifts over a 2400-volt system with feeders to the wells. The direct connected generator is rated at 250 kva, and space has been provided for the installation of another complete power-generator unit. Current is three phase, 60 cycle. The number of wells it is possible to satisfactorily pump with present equipment depends largely upon the number on at one time. If it is practical to gain daily production by only a few hours operation as many as 350 wells can be operated. One hundred fifty wells can be produced at the present rates of production.

Much of the work in Loudon field up to this time has been experimental. The Carter Oil Company has been keeping a close check upon possible input factors, as a gauge not only of ultimate success of their energy conservation project, but also to guide them in control of the project as planned. Experience of the firm in South Burbank pool, Oklahoma, and in Fitts pool as well as in other Mid-Continent fields is being turned to account in this project, and may be expanded into one of the most extensive gas injection programs of record.



Generator driven by 300 horsepower, gas fueled, 6-cylinder auxiliary. Delivered power operates plant and adjacent electrically powered pumping installations.



Maloney 200 Bbl. Flow Tanks and 500 Bbl. Stock Tanks, equipped with Maloney Stairways and Walkways, — and Maloney Separator

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MALONEY TANKS offer such important advantages as highest-grade copper-bearing steel, patented crimp at all seams and joints, live rubber packing, bolts of 95,000-lb. strength, 30″ x 48″ clean-out opening. They are furnished painted with our special Kromic Red Iron-Oxide primer and heavy Aluminum Finish Coat (all parts cleaned before painting); or Double-Hot-Dip Galvanized. 100 to 10,000 bbls.

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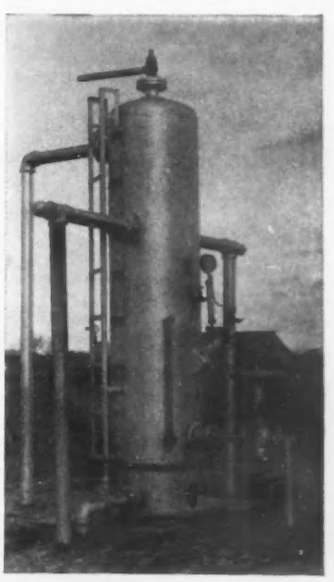

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Illinois Pumping Problem Chiefly One of Economy

By FRANK B. TAYLOR, Staff Writer

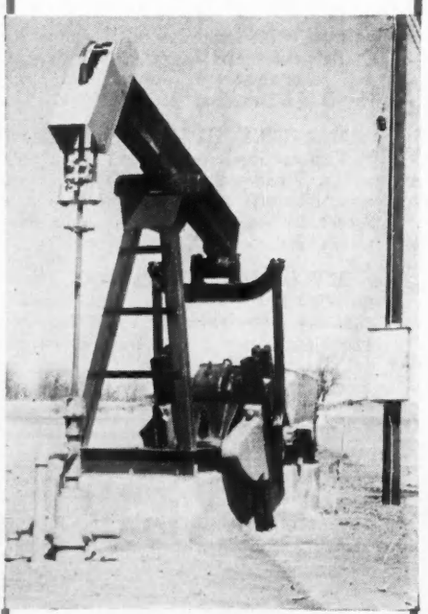
WITH 85 percent or more of all production being lifted to the surface, the Illinois Basin has developed into a major pumping area. Even those wells which come in flowing are being equipped with pumping units immediately after completion. The total number of producing wells completed in the recent development up to June of this year reached a rough 3100, with some 2750 of these on pump.

Daily production as of June 1 increased to the 220,000-barrel per day mark to establish a per well average of 70 barrels. Depths of the various sand and lime pays range from the 1500-foot sand to McClosky lime at 3100 feet, with these depths increasing slightly in the south portion of the basin. Where two or more pays are productive in the same well it is customary to produce as from a common reservoir. In these instances checks are made of the crude from each pay but the results can only be approximations. Except in edge wells excess water is not a problem, and in these wells the major factor is too little crude rather than too much water.

Reservoir Conditions Affecting Pumping

Structures in the basin are anticlinal domes with minor highs super-imposed on some of the major features. Production is from the crest and down the flanks to water contacts that are usually irregular. Pay strata are generally uniform in occurrence but lacking uniformity so far as individual characteristics are concerned. Some formations pinch out in structural positions but these are exceptions. All the formations productive in the basin are relatively hard, although shale breaks between some of the pays, as in Loudon, have a tendency to cave into the hole. Hardness of the formations and their compactness has kept abrasion of pumping equipment at a minimum except in local areas, and has obviated the use of sand screens.

PUMPING SERIES ARTICLE No. 8



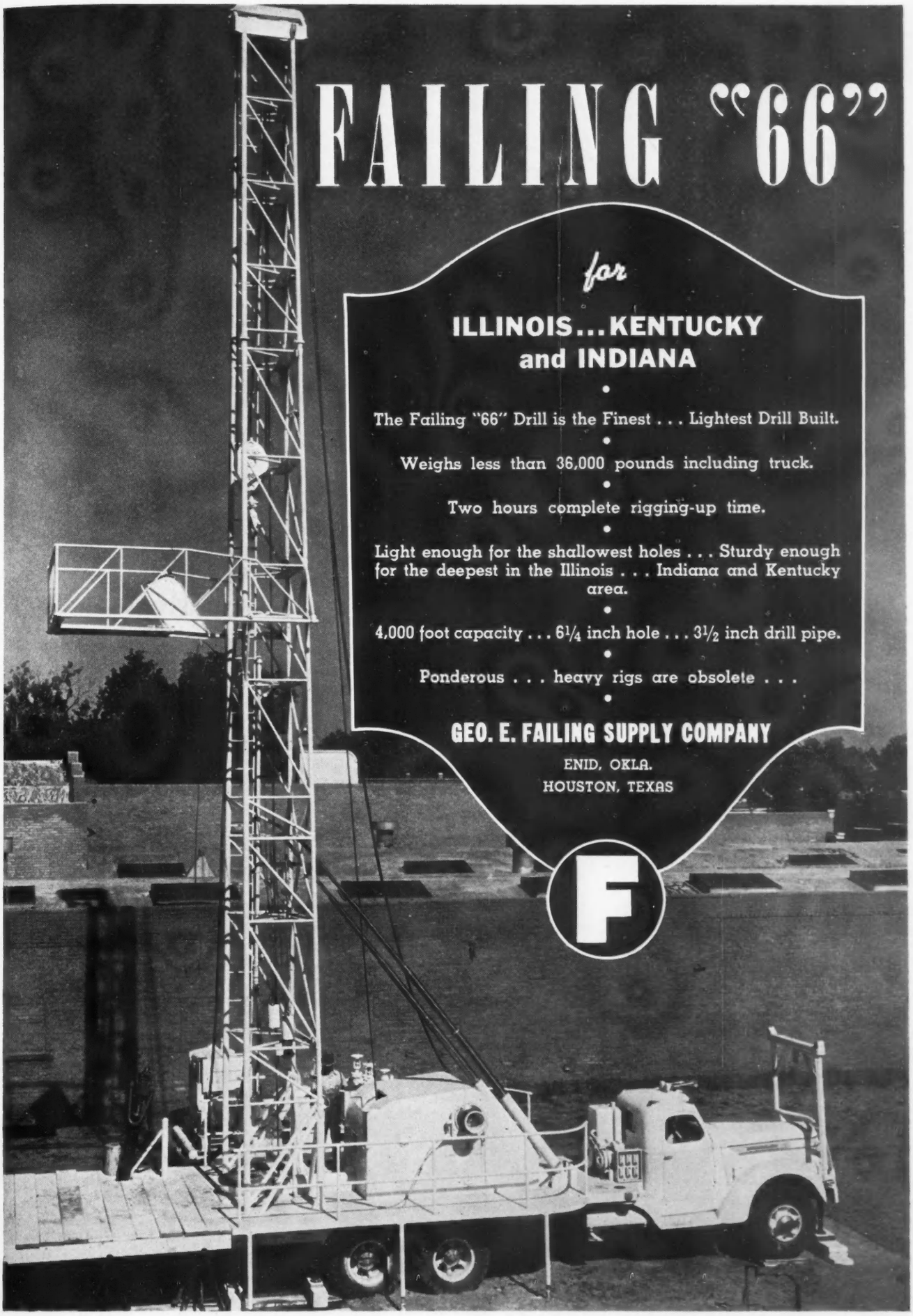
Eighty five percent of the production in state is obtained by pumping operations.

Gas/oil ratios are low in all fields. No gas caps exist at the crests of the structures, that produced being released from the crude as the pressure is lowered. This factor is one of the chief causes of short-lived flowing production for there is no upper gas to expand into the pay formation to take the place of produced crude. Also, as the pay strata are not thick, the pressure drop due to loss of entrained gas is quickly distributed over wide areas. This is especially apparent in McClosky lime, which is porous, and although a well may come in flowing for 600 barrels daily, the flowing life is very short. For the entire basin it is estimated from records that wells in both sand and lime pays drop off 75 percent of their production in between 45 and 60 days.

Crude in the basin is paraffin base, ranging from 37 to 39 degrees, API. Emulsion has not been a general problem to date, although in some instances heat treaters have been installed. It is expected that other types of treating equipment will be more widely used in the future as water increases.

Present wells in the area produce varying amounts of water along with the oil. In most cases this water is not bottom-hole water, but rather is vertically distributed throughout the pay formations. A few of the sand areas carry a distinct water-oil contact high on structure.

The oil-water contact on the flanks of the structures does not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Running rods on The Texas Company's Jett 15, Salem field.

appear to be progressive. This follows from the general tightness of the formations and the low reservoir pressures. The result will be a general pressure decline, only slightly retarded by natural water drive. This effect is being counteracted by stabilization of reservoir conditions through injection of pressured gas in some of the fields, particularly in Loudon and Salem.

Type Units and Equipment

With most production coming from 3000 feet or less, and fluid volumes proportionally light, pumping units are of low horsepower rating. The average polish rod load falls well below 10,000 pounds with anything above 11,000 pounds being exceptional. Most wells are equipped with two-inch tubing, 4-5 pounds upset. Other wells, chiefly in McClosky, are tubed with 2½-inch, 6-7 pounds upset. Rods are ⅝-inch through two-inch tubing and ¾-inch through the larger size. When pumping equipment was first installed in the basin, tubing threads were of the "V" type, but there is a marked trend toward the eight round thread style at this time.

Tubing is hung through customary 5½-inch casing, with some preference being shown for seven-inch. In early development, the greater share of casing was six-inch.

For the most part, the basin is a single unit pumping proposition. The exception is in the eastern area where about 30 central powers are in operation and more are being placed. Some operators have installed back-cranking equipment. Noble and Olney fields show the trend to central powers; Salem, Loudon and smaller fields, the continuation of original individual pumping units. Isolated wells will present a problem of individual unit selection with fuel and well requirements the determining factors. Simple well heads are used in all areas. A great many of the individual pumping units installed in the fields are equipped with engines having conversion facilities for use of either gas, gasoline or fuel oils for power.

Individual pumping units are of low power. Very few 30 horsepower units have been installed with the majority rated at less than twenty. Operators are using 10 horsepower units in Olney, Noble and Clay City areas with some 20 horsepower, twin-crank units in the latter two fields lifting from 3000 to 3100 feet. Relatively high water volumes in Fairfield and Cisne require slightly more than normal lifting power. Areas not demanding pumping equipment at this time are limited to Salem, Noble, Clay City, with a few flowing wells remaining in Olney. The number of flowing wells is steadily diminishing except in areas of new development.

In Loudon, where Carter Oil Company is operating its energy stabilization plant with generating equipment in conjunction, many wells are motor driven. Additional installations of this type are planned in a more extensive power sytem. Many of the individual powers in Salem are electrically operated with purchased power. Production is mostly from Benoist sand, 1650 to 1850 feet, with equipment operating through a 24-inch stroke at 18-20 strokes per minute. Multiple "V" belt drives are used on the units, of from three to five horsepower.

In the eastern part of the basin the majority of installations are made with metal to metal plunger type pumps. In Loudon and Salem, most of the equipment consists of regular working barrels with composition cups. As the sands are tight, there has been little trouble experienced with equipment of either character. Pulling jobs are few in any field.

Foundations

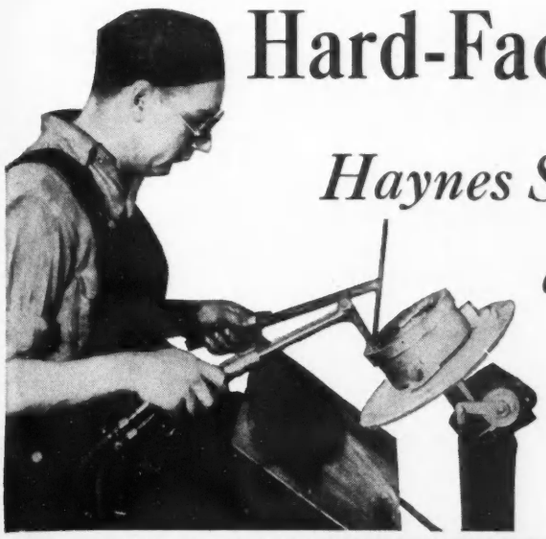
It is frequently the practice in the basin to use timber foundations for new completions, particularly in areas removed from past development. This allows the operator to skid or transport his unit to another location after initial pumping tests to determine the productive nature of the completion. In areas of established production foundations are of concrete and there has been very little difficulty in keeping them rigid. Foundations for the light powers, principally those ranging up to seven horsepower, require from 1¾ to 2½ yards of concrete. The 20-horsepower units are set on from 7 to 9 yards. As clays predominate near the surface of the basin, the bed of the foundation is usually of a desirable bearing factor.

Problems

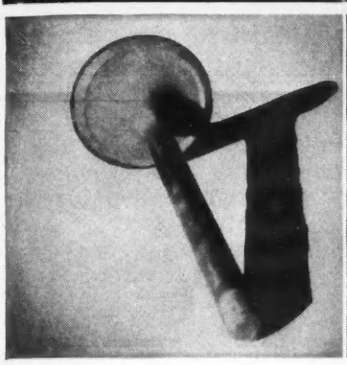
Although the basin is generally regarded as without corrosive production, two areas tested high in sulphide content, and action to counteract the trouble has been

Hard-Facing in the Oil Fields

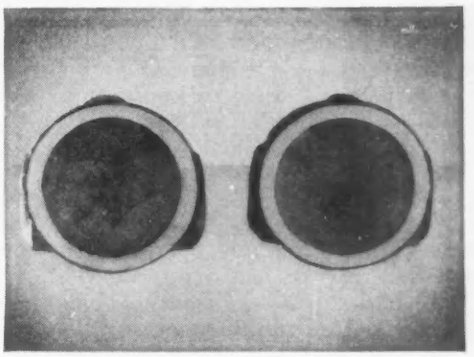
Haynes Stellite Alloy Reduces Wear and Saves Money



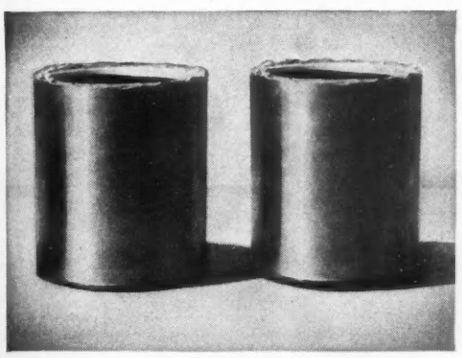
Applying Haynes Stellite hard-facing rod to a valve seat for an oil pipe line pump. The valves are also hard-faced.



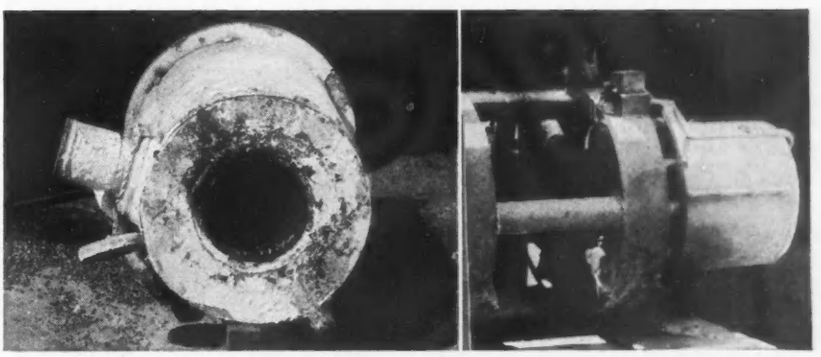
Exhaust valves and seats wearproofed with Haynes Stellite alloy were in good condition after 90 days' service in a 250 h.p. gas engine. Before hard-facing was adopted, these parts wore out in 20 days.



Disks for 7-in. Christmas tree valves, hard-faced with Haynes Stellite alloy, resist abrasive and corrosive crudes.



Refinery pump shaft sleeves, 8 in. O.D. by 11 in. long, protected from wear by Haynes Stellite hard-facing alloy.



This extrusion nozzle (left) is used in the apparatus shown (right) for coating oil pipe with a mastic of asphalt and mineral aggregate. Nozzles used to last 18 hr. but this hard-faced one will last indefinitely.

Write for the books, "Hard-Facing With Haynes Stellite Products," and "Haynes Stellite Products in the Oil Fields," which tell how these products can reduce wear and save money for you.

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Haynes Stellite hard-facing rods and information on other Haynes Stellite Company products also are available through all apparatus shipping points of The Linde Air Products Company

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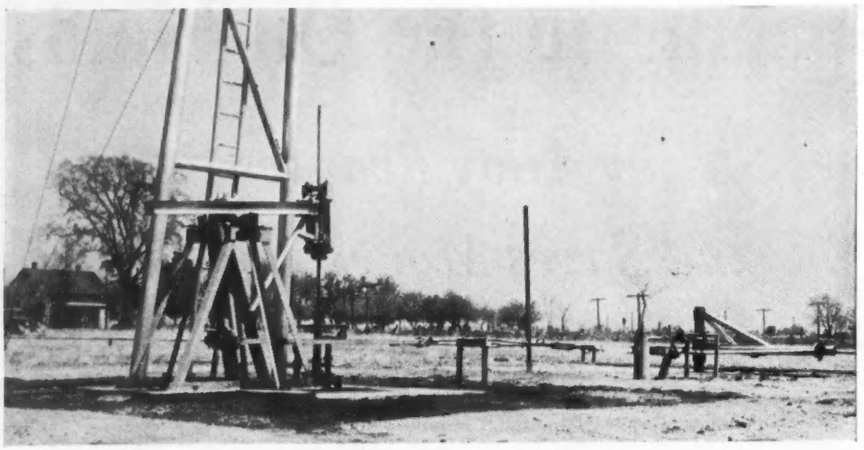


Swing arrangement in the Centralia field.

taken in one case. A localized spot in Cisne has shown sulphur in percentages that might be dangerous. Operators have not changed equipment installed prior to knowledge of the condition, but will probably do so if trouble is had with materials now in the wells. The sulphide area is bounded by producing wells showing only minor traces of sulphur and operators in the field expect the danger to be dissipated through normal production from the sulphur zone.

At the southeast edge of Clay City field, sulphur has been checked high. This area is considered localized by the productive limits of the field. Five wells have been equipped with alloyed rod but it is not believed that the condition is serious or that the zone will spread.

Emulsion problems are few for the amount of production being lifted to the surface. Some treating installations are in place, and one firm is considering heat treating their worst leases. There is the usual difficulty experienced in the transition stage when the wells go off flowing and pumping equipment is installed. Gas, for a time a problem in the Noble lime areas, was counteracted by suspending pumps and the use of gas anchors.

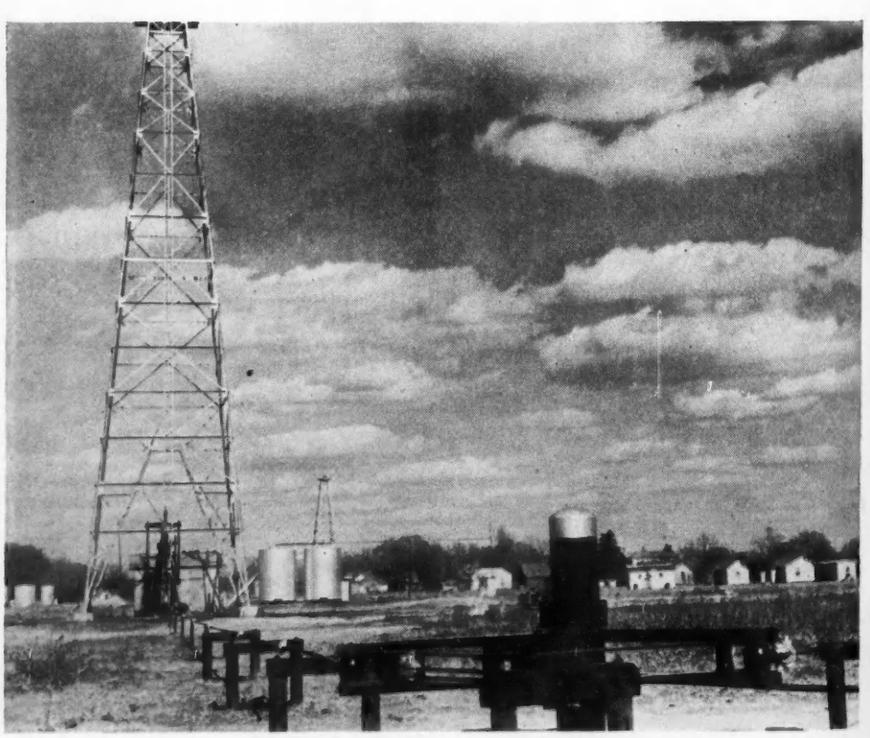
Paraffin has caused trouble during cold months in most of the basin fields. It crystallizes out of solution with the oil in the upper hundred feet of casing, and has given the most trouble in lead lines and in stock tanks. Clean out jobs put the wells back in service. It is believed by most operators that with declining production and lessened pressures, that the high natural water content of the sand will be evident through increased water production and that this will end difficulties experienced in the past with paraffin, this usually being the case in other areas.

Taken in General

Basin operators have a wide choice in the selection of pumping equipment and material. General practice in other middle depth areas is being reflected throughout the basin. The different pays found at depths ranging from 1500 to 3100 feet present problems only as to load, as fluid and formation factors change but slightly.

Past development. and that now in prospect, does not indicate any change from routine pumping problems. Trends are expressed in terms of installed equipment, except as noted. The major determining factor, evident throughout the basin, is in economic pumping practices. The operator fits his well with the unit capable of lifting the desired volume of fluid, making the selection in view of past experience rather than basing it upon characteristics of the particular well.

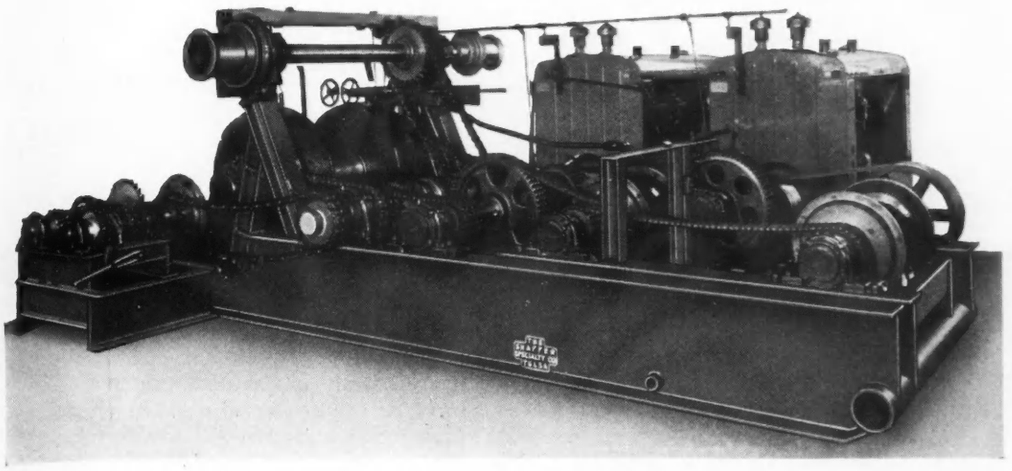
Ten, twenty and a few 30-horsepower units are in service. Central powers range from 100 to 150 horsepower and pull from six to twenty wells. A number of operators have put in larger than the minimum required units in anticipation of increased water volumes to be handled as the pays approach depletion. Still others are experimenting with even lighter units, as in Clay City field where eight horsepower pumping installations are giving satisfactory service. The entire basin, as developed in the present pay formations, is a sector of low pressures, relatively low fluid volumes, with the chief pumping problem being one of economy.



Four wells working off geared unit. One on unit, one behind unit and two off swing in foreground

Six 1800 ft. Rotary Holes-32 days in Illinois . . .

This SHAFFER MODEL 250 Portable Drilling Unit drilled 6 Rotary holes in 32 days elapsed time in Illinois



View of Model 250 Unit with Guards removed, showing details of construction

3778 ft. of 8⅝ in. Hole.. 14⅔ Days in Kansas

This Unit drilled 3778 feet of 8⅝" hole in Kansas in 14-2/3 days under the surface pipe. This time includes circulating and setting 3900 feet of 7" casing.

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Levers for operating all clutches as well as compound throttle are centralized at driller's position. Throttle control is incorporated in a single hand wheel comparable to steam engine control. All standard Dual engine-driven units are equipped with cut steel sprockets, multiple roller chain and friction clutches. The reverse is the idler sprocket and roller chain type actuated through a friction clutch and is positive in action with immediate accessibility in either direction.

Chains are lubricated by hydraulic pump providing oil spray to all moving parts.

V-belt drives are used from engines to power transmission shafts.

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Model 400

Model 500

NOTE:

Model number indicates Maximum HP Capacity of each Unit.

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Pipe Lines Retarding Influence on Illinois Output

RESTRICTION of daily output of the Illinois Basin fields is transportation facilities. Since these are now handling more than 200,000 barrels of oil daily and pipe line capacity is due to increase by 40,000 barrels in August, the 250,000-barrel estimate for the peak is logical, as the additional 10,000 barrels can be provided through tank car and truck shipments.

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Local refining capacity of 16,500 barrels daily is a variable outlet, as most of the crude oil used by these plants must be bought lower than the posted price in order for the skimming process to allow profit. So far the amount of oil available at reduced prices has not been consistent. It is likely, however, that competition in output will follow competition in drilling and that local refining capacity will get its requirement of crude oil so long as the summer period allows well output in excess of trunk pipe line capacity.

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Pipe line construction already completed to serve in the new part of the basin has called for short trunk lines from the new fields to the older trunk line systems, either crossing Illinois as transporters of Mid-Continent crude oil or ending in the old fields along the Illinois-Indiana border.

PIPE LINES SERVING NEW ILLINOIS OIL FIELDS

Canyon Pipe Line Company—gathering system and pipe line from the Salem field to nearby loading rack.

Central Crude Oil Pipe Line Company—gathering system in Loudon field.

Centralia Refining Company—pipe line from Salem field to refining plant at Centralia.

Central States Pipe Line Company—trunk line from Salem field through Olney to Lawrenceville, Illinois, lateral from Olney south to Aden field.

Crude Oil Purchasing Company—gathering system in Salem field and line to loading rack.

Egyptian Refining Company—gathering system in Centralia field.

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Illinois Pipe Line Company—trunk line system from East St. Louis to Ohio points passes through Illinois Basin. Laterals reach Patoka and Centralia. Also takes oil from Loudon from other pipe lines.

Manley Pipe Line Company—gathering system in Salem field and line to Centralia refining plants.

Oklahoma-Pipe Line Company—extensive gathering system in Loudon field and trunk line to nearby Brownstown station of Ohio Pipe Line Company.

Potter Brothers—gathering system in Salem field and line to loading rack.

Republic Pipe Line Company—gathering system in Salem field and line to loading rack.

Sohio Corporation—gathering systems in Centralia, Barnhill, Dix, Flora, Loudon, Noble, Olney and Salem, from which oil is transported to several trunk line systems.

Wabash Pipe Line Company—trunk line from Clay City and Noble fields northwest to Martinsville station of Illinois Pipe Line Company.

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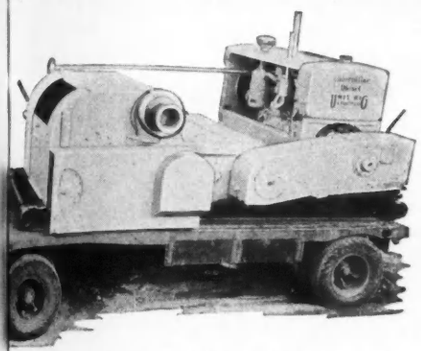
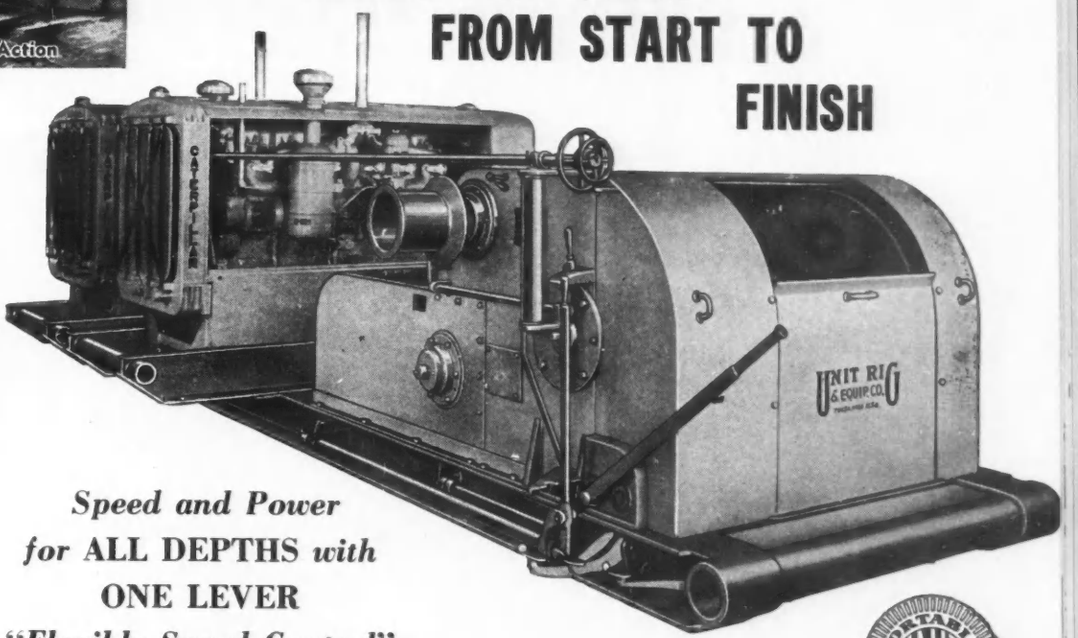
Another Model U 10 in Action

UNIT RIG

LEADS THE FIELD FROM START TO FINISH



Model U 10 Single Engine hook-up can be mounted on truck or trailer.



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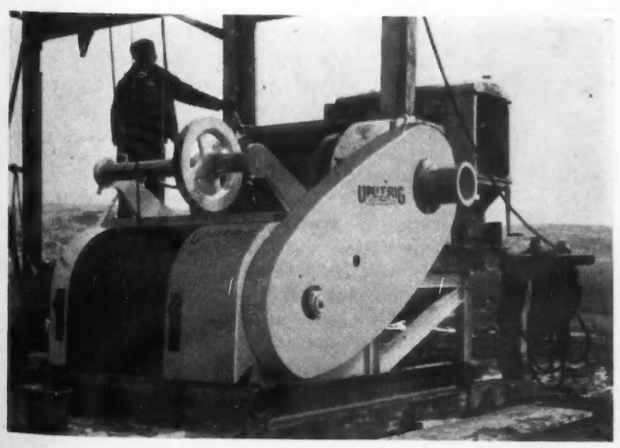
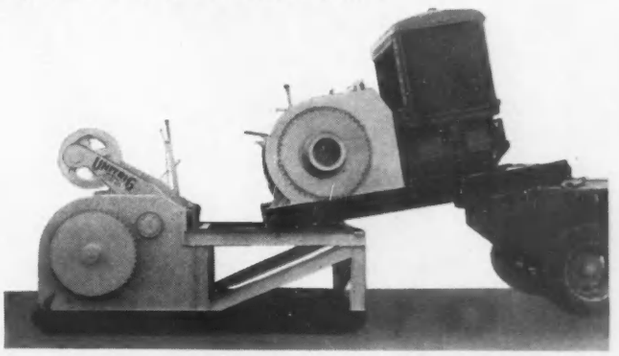


Model U 17 and U 19 Combined



Model U 19 Auxiliary Spudder Unit

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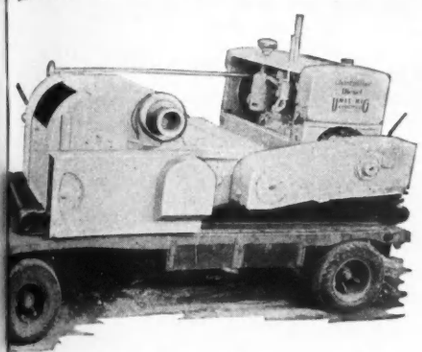
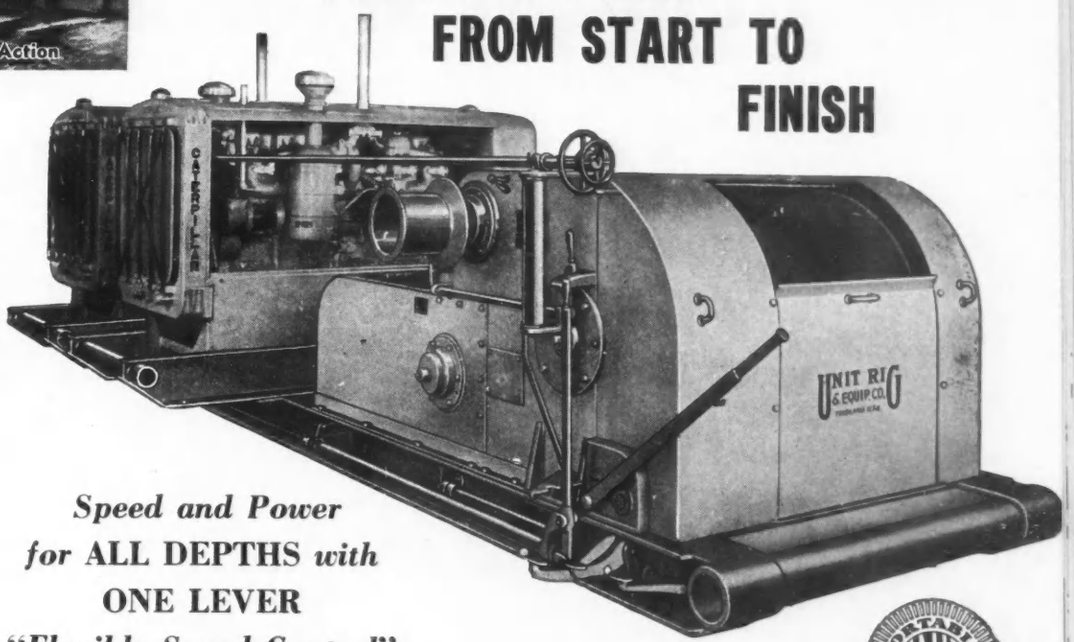


Model U 10 Single Engine hook-up can be mounted on truck or trailer.



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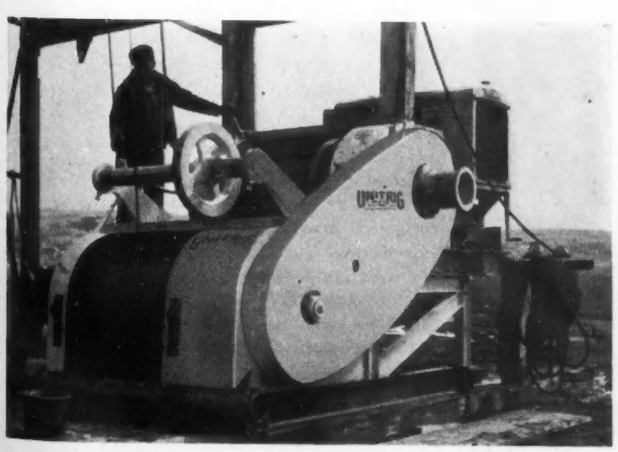
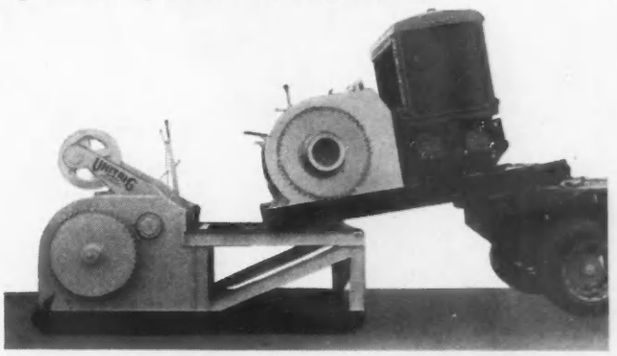
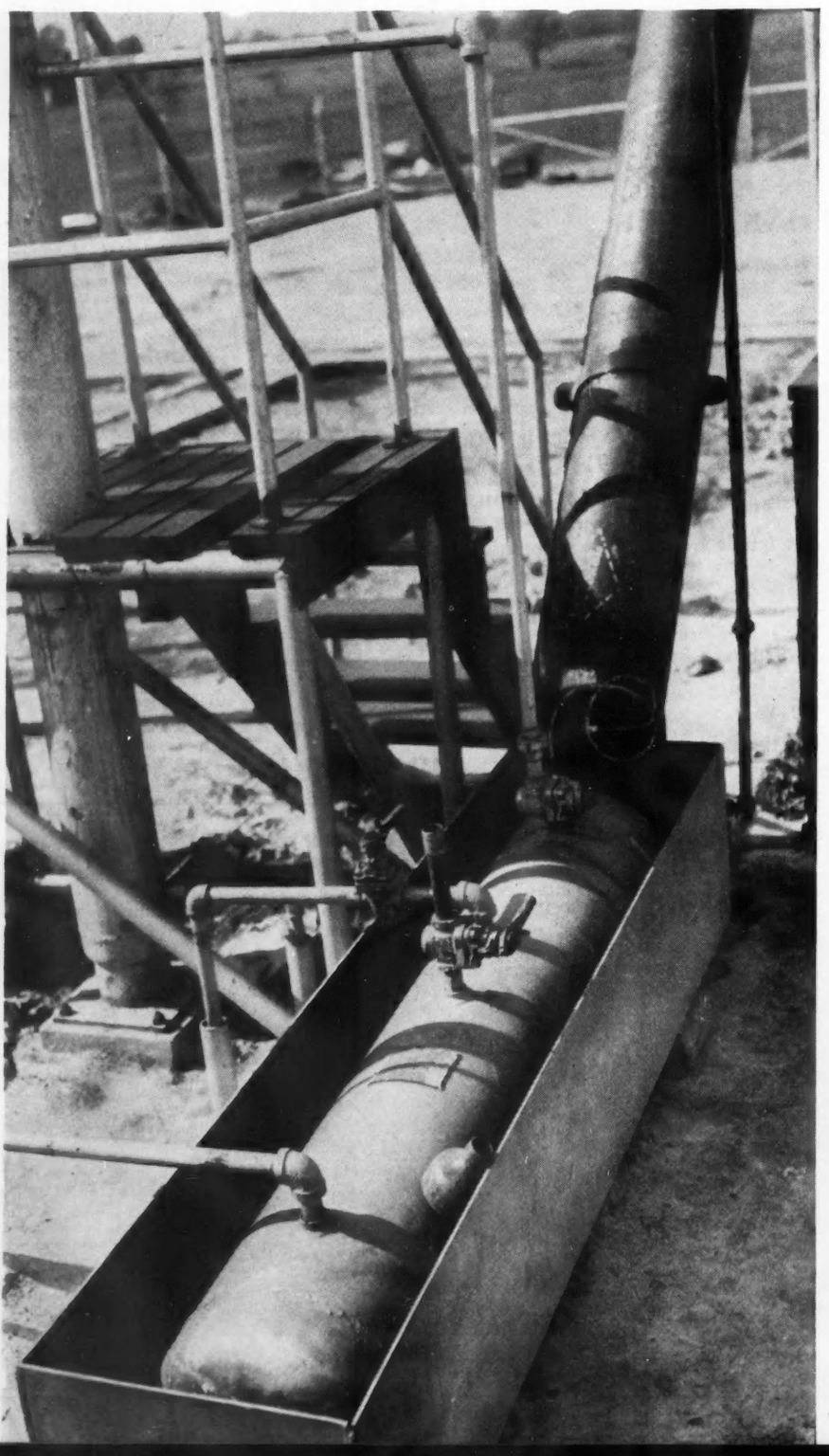


Model U 17 and U 19 Combined



Model U 19 Auxiliary Spudder Unit

Injection of Ammonia Vapor Reduces Hydrate Ice in Loudon Gas Lines



IN conjunction with energy maintenance operations now under way (see separate article this issue) on Carter Oil Company property in the north section of Loudon field, Fayette County, Illinois, is employed an extensive high-pressure injection line system to input wells. These operate at pressures exceeding 750 pounds per square inch, and the gas carries considerable water vapor in addition to heavier gas molecules not removed as condensate in the gasoline extraction unit operated at the compressor plant. These factors, as well as the severe cold temperatures prevalent in the area during winter months, resulted in the formation of gas pipe line "ice" in injection lines and feeders. Major gas pipe lines eliminate this hazard to continuous operation by installation of gasoline extraction equipment to reduce the condensate fraction to as near zero as possible, and to assure a gas dry from the standpoint of water vapor, dehydrating equipment is installed.

These methods were not considered practical in the Loudon project in view of the past status of operations. To overcome the blocking of lines by hydrates, the firm partially dried the gas, used alcohol as a lubricant, and successfully injected ammonia vapor into the gas

Natural gas enters the horizontal drum at the far end, and flowing through vaporous ammonia carries some of the vapor out the discharge in the foreground. Note the commercial ammonia drum supported at an angle in the rear to allow gravity flow through metal tubing connection into the vapor chamber.

stream to eliminate hydrate formation.

To accomplish this the operators designed and constructed special equipment to handle the ammonia, commercially available in liquid form.

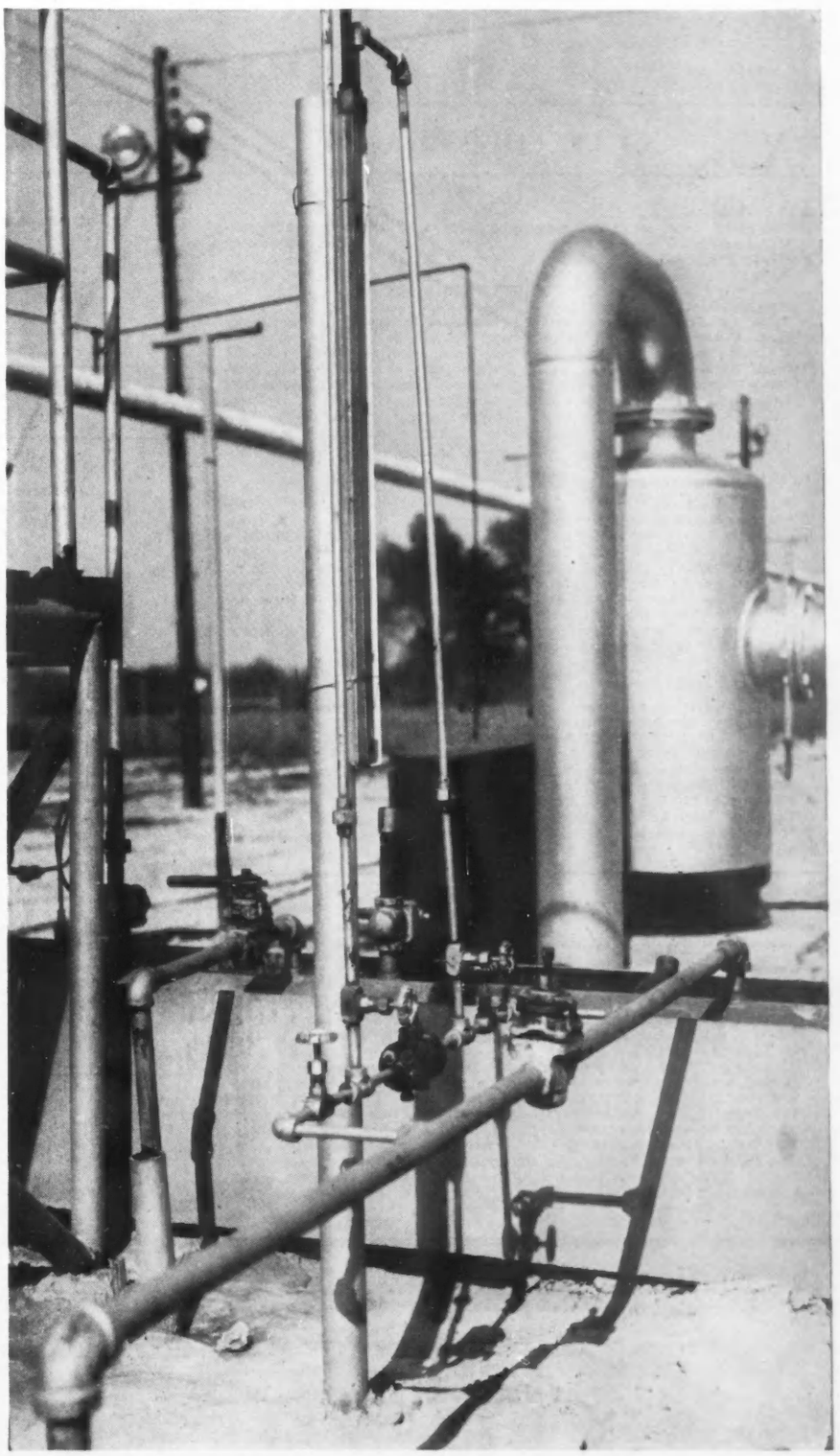
A small tank was placed in a horizontal position on low piers. Into this were welded three short connections, one near the ends and one at the center on the upper side of the tank. Another connection was made into the tank for charging with liquid ammonia. A special holder was made for the ammonia drums, supporting the drum in such a position that a gravity flow occurred into the horizontal chamber. The horizontal tank was not completely filled, only a relatively small volume of ammonia being introduced through the metallic tubing used as a connection.

Natural gas from the gasoline extractor on the intake of the intermediate stage compressors is diverted into one connection on the ammonia vapor chamber and is exhausted into the plant system through the other end connection. The gas entransit through the drum does not pick up liquid ammonia, this being dangerous and in volumes beyond all requirements, but does carry over with it a very small content of ammonia vapor. The center tap on the horizontal drum is used to bleed down pressure and to check ammonia content.

Control of the gas volumes passing through the vapor drum is by means of an orifice plate cut with a one quarter-inch orifice, and shunted with a plug valve on a bypass. This manifold, of quarter inch piping, incorporates two regulating valves. Risers from each side of the orifice flanges terminate in the two sides of a 30-inch manometer allowing the operator to determine the gas volumes passing through the installation.

The function of ammonia vapor in eliminating gas hydrate to liquid and gas is one of affinity. Gas hydrates, or "ice," most readily forms from heavier gas molecules combining with water vapor under excessive pressures and low temperatures. In general, the formation of a hydrate in a given gas is proportional to these two factors. The hydrate is unstable under ordinary conditions and will evaporate to moisture when removed from a "freeze." Its danger lies in plugging lines, particularly at points of pressure change at slight leaks in the system.

Ammonia, on the other hand, has a definite affinity for water vapor, far more so than has the gas molecule. Introduced into a gas stream containing water vapor, the ammonia, NH_3, combines with water to form ammonia-hydroxide. Coming into contact with a hydrate already formed, it robs the gas molecule of its water bond, setting free the gas. The hydroxide remains a liquid in such small volumes that it does not hinder the normal flow of the gas.



Manifold returning gas into system after picking up ammonia vapor. Direction of flow is into foreground. Volumes are controlled and computed through orifice acting on manometer supported on pipe standard.

Geological Data and Development History of Recently Opened and Currently Active

OIL AND GAS FIELDS

in

ILLINOIS—INDIANA—KENTUCKY BASIN

ILLINOIS

CLAY COUNTY

CLAY CITY

Means of Discovery: Seismograph. **Extent of Development:** Possible extension south, north half defined on all sides. **Discovery Well:** Pure Oil Co.'s Weiler 1, SE SW SE 33-3n-8e; initial, 40 bbls., Cypress sand 2607 to 2613 ft.; completed Feb. 27, 1937; Pure Oil Co.'s Travis 1, NW SW NE 33-3n-8e, initial, 2565 bbls., flowing; McClosky lime 2941 to 2964 ft.; completed March 4, 1937. **Type of Structure:** Anticline. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 12 ft. **Productive Acres:** 2700. **Ultimate Recovery:** 29,140,000 bbls. **Production to Date:** 6,791,000 bbls. **Rigs Running May 1:** 2. **Reserve:** 22,349,000 bbls. **Oil Outlets:** Wabash Pipe Line Co., Sohio Corp. **Gravity:** 39.5. **Principal Leaseholders:** Carter Oil Co., Gordon Oil Co., Olson Oil Co., Pure Oil Co. **Remarks:** Four wells in this field are producing from basal Aux Vases lime, which should not be confused with Aux Vases sand.

FLORA

Means of Discovery: Subsurface and Seismograph. **Extent of Development:** One-third drilled. **Discovery Well:** Kingwood Oil Co.'s Graham 1, C S½ SW SE NE 13-3n-6e; initial, 275 bbls; McClosky lime, 2972 to 2983 feet. **Type of Structure:** Dome. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 9 ft. **Productive Acres:** 700. **Ultimate Recovery:** 3,125,000 bbls. **Production to Date:** 85,000 bbls. **Rigs Running May 1:** 8. **Reserve:** 3,040,000 bbls. **Oil Outlets:** Sohio Corp. **Gravity:** 39. **Principal Leaseholders:** Gulf Refining Co., Kingwood Oil Co. **Remarks:** Cores indicate later production from Bethel sand.

FLORA (East)

Means of Discovery: Seismograph. **Extent of Development:** 1 well producing, dry hole 2 miles north. **Discovery Well:** Ohio Oil Co.'s Hardy 1, C W½ SE SE 9-3n-7e; initial, 460 bbls., flowing; McClosky lime, 2958 to 2967 ft.; completed July 19, 1938. **Type of Structure:** Dome. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 9 ft. **Productive Acres:** 100 (estimate). **Ultimate Recovery:** 500,000 bbls. **Production to Date:** 27,250 bbls. **Rigs Running May 1, 1939:** None. **Reserve:** 472,750 bbls. **Oil Outlets:** Sohio Corp. **Gravity:** 39.1. **Principal Leaseholders:** Ohio Oil Co.

CLINTON COUNTY

CENTRALIA

Means of Discovery: Seismograph. **Extent of Development:** Defined, small area may be added. **Discovery Well:** Adams Oil & Gas Co.'s Schmidt 1, C SE SE NE 2-1n-1w, Bethel sand, 1347½ to 1384 ft.; initial, 155 bbls.; completed Nov. 30, 1937. **Type of Structure:** Anticline. **Producing Formation:** Cypress sand and Bethel sand, few wells in McClosky lime. **Average Sand Thickness:** Cypress sand, 14 ft.; Bethel sand, 21 ft. **Productive Acres:** 1800 acres; Cypress production, 500 acres. **Ultimate Recovery:** 9,800,000 bbls. **Production to Date:** 3,650,000 bbls. **Rigs Running May 1:** 7. **Reserve:** 6,150,000 bbls. **Oil Outlets:** Illinois Pipe Line Co., Sohio Corp. **Gravity.** 39. **Principal Leaseholders:** Adams Oil & Gas Co., Gulf Refining Co., John Pugh, Shell Oil Co.; many independent producers.

COLES COUNTY

MATTOON

Means of Discovery: Seismograph. **Extent of Development:** 1 well producing, 1 offset dry. **Discovery Well:** Wheeles' et al's Michael 1, SWC NW 1-11n-7e, 18 bbls., Cypress sand, 1845 to 1912 ft. drilled to 2173 feet and plugged back Feb. 21, 1939. **Type of Structure:** Anticline. **Producing Formation:** Cypress sand. **Average Sand Thickness:** 10 ft. **Productive Acres:** 10. **Ultimate Recovery:** 1000 bbls. **Production to Date:** 500 bbls. **Rigs Running May 1:** None. **Reserve:** 500 bbls. **Oil Outlet:** Truck. **Gravity:** 38.7.

FAYETTE COUNTY

LOUDON

Means of Discovery: Seismograph. **Extent of Development:** Dry holes on all sides, extent of structure not determined, drilling one-third complete. **Discovery Well:** Carter Oil Co.'s Miller 1, C W½ NW NW, 12-8n-3e; initial, 70 bbls.; Bethel sand 1992 to 1604 ft; plugged back from 3170 ft., where it had showing in Devonian beds. **Type of Structure:** Anticline. **Producing Formation:** Cypress sand, Bethel sand, some from stray in Paint Creek. **Average Sand Thickness:** Cypress sand, 18 ft.; Bethel sand, 16 ft. **Productive Acres:** 17,320. **Ultimate Recovery:** 165,000,000 bbls. **Production to Date:** 6,798,000 bbls. **Rigs Running May 1:** 89. **Reserve:** 158,201,100 bbls. **Oil Outlets:** Fayette Pipe Line Co., Illinois Pipe Line Co., Oklahoma Pipe Line Co., Western Pipe Line Co., tank car shipments. **Gravity:** 38.7. **Principal Leaseholders:** Carter Oil Co., Jarvis Brothers, Kingwood Oil Co., Magnolia Petroleum Co., Minerva Oil Co. **Remarks:** Largest area of any field in new Illinois Basin development; being drilled on 20-acre spacing on more than half its acreage, with Cypress and Bethel sand producing from one well.

ST. JAMES

Means of Discovery: Trend. **Extent of Development:** Dry holes three-fourths mile south and same distance northwest. Productive limits not fixed. **Discovery Well:** Rosenthal et al's Washburn 1, NE SE NW 30-6n-3e; initial, 150 bbls.; Cypress sand, 1600 to 1622 ft.; completed Sept. 20, 1938. **Type of Structure:** Anticline. **Producing Formation:** Cypress sand. **Average Sand Thickness:** 32 ft. **Productive Acres:** 650. **Ultimate Recovery:** 5,300,000 bbls. **Production to Date:** 188,200 bbls. **Rigs Running May 1, 1939:** 2. **Reserve:** 5,111,800 bbls. **Oil Outlets:** Illinois Pipe Line Co. **Gravity:** 39.3. **Principal Leaseholders:** Rosenthal et al, The Texas Co.

JEFFERSON COUNTY

DIX

Means of Discovery: Seismograph. **Extent of Development:** Producing limits not defined. **Discovery Well:** Carter Oil Co.'s Tate 1, C W½ NW NE 10-1s-2e; initial, 90 bbls.; Bethel sand, 1980 to 1992 ft.; completed Jan. 1, 1938. **Type of Structure:** Anticline. **Producing Formation:** Bethel sand. **Average Sand Thickness:** 16

SPECIAL INSERT MAP INCLUDED WITH THIS ISSUE—Shows new and old oil and gas fields in adjacent areas of Illinois, Indiana and Kentucky, together with pipe line and refining plants.

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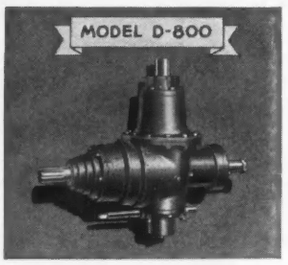

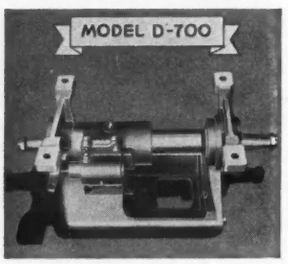

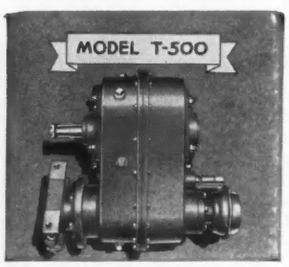

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ft. **Productive Acres:** 1200. **Ultimate Recovery:** 5,720,000 bbls. **Production to Date:** 427,900 bbls. **Rigs Running May 1, 1939:** 2. **Reserve:** 5,293,000 bbls. **Oil Outlets:** Sohio Corp. **Gravity:** 37.5. **Principal Leaseholder:** Carter Oil Company. **Remarks:** Field has possibilities of Aux Vases sand production. Drilled on 20-acre spacing and will have pressure maintenance.

INA

Means of Discovery: Trend. **Extent of Development:** 2 wells producing, defined on north. **Discovery Well:** Nollem & Benoist's Kelly 1, NE NW NE 25-4s-2e; initial production, 250 bbls., McClosky lime, 3002 to 3009 ft. **Type of Structure:** Dome. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 7 ft. **Productive Acres:** 100. **Ultimate Recovery:** 250,000 bbls. **Production to Date:** 11,500 bbls. **Rigs Running May 1, 1939:** None. **Reserve:** 238,500 bbls. **Oil Outlets:** Sohio Corp. **Gravity:** 38. **Principal Leaseholders:** Nollem & Benoist, Benedum & Trees.

MARCOE

Means of Discovery: Seismograph. **Extent of Development:** One well producing; one drilling ¾ mile away. **Discovery Well:** Magnolia Petroleum Co.'s Dare 1, SE SW NE 22-3s-2e, initial production, 237 bbls.; McClosky lime, 2746 to 2765 ft. **Type of Structure:** Anticline. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 18 ft. **Productive Acres:** 100 (estimated). **Ultimate Recovery:** 500,000 bbls. **Production to Date:** Shut in since discovery. **Rigs Running May 1, 1939:** 1. **Reserve:** 500,000 bbls. **Gravity:** 38.8. **Principal Leaseholder:** Magnolia Petroleum Co. **Remarks:** Should draw development with provision of oil outlet in 1939.

JEFFERSON COUNTY

ROACHES

Means of Discovery: Seismograph. **Extent of Development:** 2 wells, 3 dry holes. **Discovery Well:** Magnolia Petroleum Co.'s Harvey 1, NW NE SW 22-2s-1e, McClosky lime, 2231 to 2237 ft; initial, 217 bbls pumping, 1128-38 ft. **Type of Structure:** Dome. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 6 ft. **Productive Acres:** 50. **Ultimate Recovery:** 150,000 bbls. **Production to Date:** None. **Rigs Running May 1, 1939:** None. **Reserve:** 150,000 bbls. **Gravity:** 39.1. **Principal Leaseholder:** Magnolia Petroleum Company.

MARION COUNTY

PATOKA

Means of Discovery: Seismograph. **Extent of Development:** Completely drilled. **Discovery Well:** Adams Oil & Gas Co.'s Merryman 1, SE SW 21-4n-1e; initial, 50 bbls.; Bethel sand, 1391 to 1418 ft.; completed Jan. 27, 1937. **Type of Structure:** Anticline. **Producing Formation:** Bethel sand. **Average Sand Thickness:** 16 ft. **Productive Acres:** 800. **Ultimate Recovery:** 3,250,000 bbls. **Production to Date:** 1,262,000 bbls. **Rigs Running May 1, 1939:** None. **Reserve:** 1,988,000 bbls. **Oil Outlets:** Illinois Pipe Line Co. **Gravity:** 38.6. **Principal Leaseholders:** Adams Oil & Gas Co., Cypress Oil Co., Frank Frederick, Hancock & Day, Kirk O. Holland. **Remarks:** First field discovered in Illinois Basin development, 11 wells abandoned in 1938.

SALEM

Means of Discovery: Seismograph. **Extent of Development:** Still under intensive development, dry holes surround producing area. **Discovery Well:** The Texas Co.'s Tate 1, C NW NW 5-1n-2e; initial, 730 bbls.; Bethel sand, 1690 to 1725 ft.; completed July 6, 1938; hole drilled to 1911 ft. and plugged back to 1790 ft., found both Aux Vases sand and McClosky lime saturated. **Type of Structure:** Anticline. **Producing Formation:** Bethel sand, Aux Vases sand, McClosky lime. **Average Sand Thickness:** Bethel sand 41 ft.; Aux Vases sand 11 ft.; McClosky lime 30 ft. **Productive Acres:** 9800. **Ultimate Recovery:** 233,250,000 bbls. **Production to Date:** 12,361,500 bbls. **Rigs Running May 1, 1939:** 108. **Reserve:** 220,888,500 bbls. **Oil Outlets:** Central States Pipe Line Co., Crude Oil Purchasing Co., Illinois Pipe Line Co., Magnolia Petroleum Co., Manley Pipe Line Co., trucks and tank cars. **Gravity:** 39.3. **Principal Leaseholders:** Kingwood Oil Co., Magnolia Petroleum Co., W. C. McBride, Inc., Rockhill Oil Co., The Texas Co., Weiser Oil Co. **Remarks:** Current program centered on drilling Bethel sand wells with McCloskey lime wells to follow. Only limited output from Aux Vases sand.

RICHLAND COUNTY

NOBLE

Means of Discovery: Seismograph. **Extent of Development:** Defined except to south. **Discovery Well:** Ohio Oil Co.'s Arbuthnor 1, NWC 8-3n-9e; initial, 1990 bbls., McClosky lime, 2980 to 2990 ft.; completed Aug. 2, 1937. **Type of Structure:** Anticline. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 10 ft. **Productive Acres:** 2800. **Ultimate Recovery:** 15,500,000 bbls. **Production to Date:** 5,365,000 bbls. **Rigs Running May 1, 1939:** None. **Reserve:** 10,135,000 bbls. **Oil Outlets:** Illinois Pipe Line Co., Sohio Corp., Wabash Pipe Line Co. **Gravity:** 39.2. **Principal Leaseholders:** Carter Oil Co., Mammoth Producing & Refining Corp., Pure Oil Co.

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NOBLE (North)

Means of Discovery: Seismograph. **Extent of Development:** Not defined. **Discovery Well:** Pure Oil Co.'s Wakefield 1, C W½ NW NE 26-4n-93; initial, 515 bbls.; Cypress sand, 2564 to 2583 ft.; completed Nov. 11, 1938. **Type of Structure:** Anticline dome. **Producing Formation:** Cypress sand. **Average Sand Thickness:** 22 ft. **Productive Acres:** 1000. **Ultimate Recovery:** 5,720,000 bbls. **Production to Date:** 261,000 bbls. **Rigs Running May 1, 1939:** 11. **Reserve:** 5,526,100 bbls. **Oil Outlets:** Wabash Pipe Line Co. **Gravity:** 38.3. **Principal Leaseholder:** Pure Oil Co. **Remarks:** Possibility of production from McClosky lime.

NOBLE (South)

Means of Discovery: Seismograph. **Extent of Development:** Completely drilled. **Discovery Well:** Mammoth Producing & Refining Corp.'s McCauley 1, SW SE NW, 29-3n-9e; initial, 785 bbls.; McClosky lime, 3053 to 3064 ft.; completed Feb. 22, 1938. **Type of Structure:** Anticline. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 12 ft. **Productive Acres:** 400. **Ultimate Recovery:** 2,400,000 bbls. **Production to Date:** 240,500 bbls. **Rigs Running May 1, 1939:** None. **Reserve:** 2,159,500 bbls. **Oil Outlets:** Sohio Corp., Wabash Pipe Line Co. **Gravity:** 39.6. **Principal Leaseholders:** M. A. B. Oil Co., Mammoth Producing & Refining Corp. **Remarks:** Separated from Noble field by dry holes but often considered as part of Noble proper.

LNEY

Means of Discovery: Subsurface and seismograph. **Extent of Development:** Not defined to north, extension likely. **Discovery Well:** Kingwood Oil Co.'s Allen 1, C W½ SE NW, 7-4n-10e; initial, 210 bbls.; McClosky lime, 3036 to 3045 ft. **Type of Structure:** Anticline. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 9 ft. **Productive Acres:** 1500. **Ultimate Recovery** 6,915,000 bbls. **Production to Date:** 589,000 bbls. **Rigs Running May 1, 1939:** 8. **Reserve:** 6,326,000 bbls. **Oil Outlets:** Central States Pipe Line Co., Sohio Corp., Wabash Pipe Line Co. **Gravity:** 39.2. **Principal Leaseholders:** Pyramid Petroleum Co., Richland Corp., The Texas Co. **Remarks:** Dry holes were drilled around discovery well and main part of field discovered a mile to the east.

SCHNELL

Means of Discovery: Trend. **Extent of Development:** Defined except to north. **Discovery Well:** J. V. Wicklund's McCauley 1, NE SW NW 7-2n-9e; initial, 1000 bbls.; McClosky lime, 2980 to 2987 ft.; completed June 21, 1938. **Type of Structure.** Dome. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 8 ft. **Productive Acres:** 100. **Ultimate Recovery:** 400,000 bbls. **Production to Date:** 110,000 bbls. **Rigs Running May 1, 1939:** None. **Reserve:** 290,000 bbls. **Oil Outlets:** Sohio Pipe Line Co. **Gravity:** 38.6. **Principal Leaseholders:** Pure Oil Co., J. V. Wucklund.

SHELBY COUNTY

GOLDENGATE

Means of Discovery: Trend. **Extent of Development:** One well. **Discovery Well:** New Penn Development Co.'s Wagner 1, NW SW NE 30-2s-9e, McClosky lime, 3433 to 3436 ft, total depth 3641 ft; initial, 65 bbls, pumping; March 7, 1939. **Type of Structure:** Dome. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 5 ft. **Productive Acres:** 10. **Ultimate Recovery:** 1000 bbls. **Rigs Running May 1, 1939:** None. **Reserve:** 1000 bbls. **Gravity:** 38.7. **Principal Leaseholder:** New Penn Development Co.

STEWARDSON

Means of Discovery: Seismograph. **Extent of Development:** One well. **Discovery Well:** Aylward Production Co.'s Wabash Railroad Co. 1, C N½ NE 27-10n-5e; Bethel sand, 1927 to 1937 ft; initial, 30 bbls; completed, 4-12-39. **Type of Structure:** Anticline. **Producing Formation:** Bethel sand. **Average Sand Thickness:** 10 ft. **Productive Acres:** 50. **Ultimate Recovery:** 40,000 bbls. **Production to Date:** None. **Rigs Running May 1, 1939:** None. **Reserve:** 40,000 bbls. **Gravity:** 38.8. **Principal Leaseholder:** Aylward Production Co.

WAYNE COUNTY

ADEN

Means of Discovery: Seismograph. **Extent of Development:** 5 wells producing; dry holes indicate small pool. **Discovery Well:** The Texas Co.'s Silverman 1, C E½ SW NW 16-1s-7e; initial production, 385 bbls.; McClosky lime, 3276 to 3284½ ft.; completed Feb. 11, 1939. **Type of Structure:** Dome. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 11 ft. **Productive Acres:** 400, estimated. **Ultimate Recovery:** 2,000,000 bbls. **Production to Date:** 9,760 bbls. **Rigs Running May 1, 1939:** 5. **Reserve:** 1,990,240 bbls. **Oil Outlets:** Central States Pipe Line Co. **Gravity:** 40.8. **Principal Leaseholder:** The Texas Co.

BARNHILL

Means of Discovery: Trend. **Extent of Development:** 2 wells producing, one dry hole nearby. **Discovery Well:** Carl Robinson's Felix 1, SW SE SE 27-2s-8e, initial production, 460 bbls. McClosky lime, 3386 to 3409 ft., Feb. 7, 1939. **Type of Structure:** Dome. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 6 ft. **Productive Acres:** 50. **Ultimate Recovery** 50,000 bbls. **Production to Date:** 3,900 bbls. **Rigs Running May 1, 1939:** 1. **Reserve:** 46,100 bbls. **Oil Outlets:** Sohio Corp. **Gravity:** 41. **Principal Leaseholders:** Carl Robinson, H. H. Weinert, Inc.

BOYLESTON

Means of Discovery: Seismograph. **Extent of Development:** 5 wells producing; defined to south, dry hole ¾-mile northwest, 20-acre spacing. **Discovery Well:** Roche & Voyles' McPherson 1, C S½ SE NE 4-2s-7e, initial, 1030 bbls., flowing natural; McClosky lime, 3256 to 3265 ft; completed Dec. 13, 1939. **Type of Structure:** Anticline. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 8 ft. **Productive Acres:** 250. **Ultimate Recovery:** 1,125,000 bbls. **Production to Date:** 1,875 bbls. **Rigs Running May 1, 1939:** 3. **Reserve:** 1,123,175 bbls. **Oil Outlets:** Central States Pipe Line Co. **Gravity:** 39.1. **Principal Leaseholders:** Pure Oil Co., Roche & Voyles, H. H. Weinert, Inc.

CISNE

Means of Discovery: Seismograph. **Extent of Development:** Extensions possible; also possible production from Aux Vases sand. **Discovery Well:** Pure Oil Co.'s Bradley 1, SWc NW 26-1n-7e; initial production, 100 bbls.; Aux Vases sand, 2982 to 2987 ft.; completed March 7, 1937. Later wells drilled to McClosky lime. **Type of Structure:** Anticline. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 11 ft. **Productive Acres:** 1000. **Ultimate Recovery:** 7,340,000 bbls. **Production to Date:** 1,103,800 bbls. **Rigs Running May 1:** 2. **Reserve:** 6,136,200 bbls. **Oil Outlets:** Wabash Pipe Line Co. **Gravity:** 39. **Principal Leaseholder:** Pure Oil Co. **Remarks:** First field discovered in lime area of Illinois Basin in current development.

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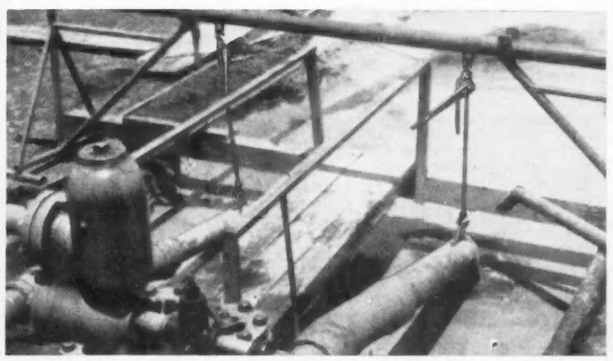

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ENTERPRISE

Means of Discovery: Seismograph. **Extent of Development:** 4 wells producing, no dry holes near. **Discovery Well:** Pure Oil Co.'s Behymer 1, C W½ SE NE, 4-1n-8e; initial production, 565 bbls, flowing after acid; McClosky lime, 3032 to 3062 ft.; completed Feb. 28, 1939. **Type of Structure:** Anticline. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 21 ft. **Productive Acres:** 1000. **Ultimate Recovery:** 5,000,000 bbls. **Production to Date:** 5600 bbls. **Rigs Running May 1, 1939:** 11. **Reserve:** 4,994,400 bbls. **Oil Outlets:** Wabash Pipe Line Co., Sohio Corp. **Gravity:** 39.6. **Principal Leaseholders:** Manahan Oil Co., Pure Oil Co., Witcher Development Co. **Remarks:** Looks like important discovery in McClosky lime area.

LEECH

Means of Discovery: Subsurface and trend. **Extent of Development:** 2 wells producing; dry hole mile northwest. **Discovery Well:** Iroquois Oil Co.'s Walker 1, NWc 16-3s-9e; initial, 190 bbls.; McClosky lime, 2438 to 2832 ft.; completed Sept. 13, 1938. **Type of Structure:** Dome. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 6 ft. **Productive Acres:** 100 (estimate). **Ultimate Recovery:** 300,000 bbls. **Production to Date:** 19,800 bbls. **Rigs Running May 1, 1939:** 3. **Reserve:** 280,200 bbls. **Oil Outlets:** Sohio Corp. **Gravity:** 38.8. **Principal Leaseholders:** Sloan and Allen, Iroquois Oil Co.

MT. ERIE

Means of Discovery: Trend and subsurface. **Extent of Development:** 1 well producing. **Discovery Well:** Muhlbach's Anderson 1, NWc 2-1s-8e; initial production, 50 bbls.; McClosky lime, 3080 to 3092 ft.; Dec. 31, 1938. **Type of Structure:** Dome. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 12 ft. **Productive Acres:** 40. **Ultimate Recovery:** 100,000 bbls. **Production to Date:** 3000 bbls. **Rigs Running May 1, 1939:** None. **Reserve:** 97,000 bbls. **Oil Outlets:** Sohio Corp. **Gravity:** 39.1. **Principal Leaseholder:** Muhlbach.

NORTH ADEN

Means of Discovery: Seismograph. **Extent of Development:** Defined to north; dry hole ¾ mile south. **Discovery Well:** H. H. Weinert, Inc.'s Twist 1, C NE NW SW 33-2s-7e; initial production, 430 bbls, flowing; McClosky lime, 3309 to 3325 ft.; completed July 26, 1938. **Type of Structure:** Anticline. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 13 ft. **Productive Acres:** 1000. **Ultimate Recovery:** 6,500,000 bbls. **Production to Date:** 463,800 bbls. **Rigs Running May 1, 1939:** 4. **Reserve:** 6,036,200 bbls. **Oil Outlets:** Central States Pipe Line Co., Sohio Corp. **Gravity:** 40.8. **Principal Leaseholders:** Pure Oil Co., Rockhill Oil Co., The Texas Co., H. H. Weinert, Inc.

RINARD

Means of Discovery: Trend. **Extent of Development:** Abandoned, 1 well completed. **Discovery Well:** Benedum & Trees, Knapp 1, SE NW SW 33-2n-7e; McClosky lime, 3144 to 3154 ft., 500 bbls initial; Oct. 5, 1937. **Type of Structure:** Dome. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 10 ft. **Productive Acres:** Abandoned. **Ultimate Recovery:** 5500 bbls. **Production to Date:** 5500 bbls. **Gravity:** 38.5.

WASHINGTON COUNTY

CORDES

Means of Discovery: Seismograph. **Extent of Development:** 12 wells producing 1¼ miles distant. **Discovery Well:** G. H. Blankenship's Dennis 1, NE SW NE 14-3s-3w; initial production, 60 bbls.; Benoist sand, 1228 to 1239 ft.; February 7, 1939. **Type of Structure:** Anticline. **Producing Formation:** Bethel sand. **Average Sand Thickness:** 12 ft. **Productive Acres:** 640. **Ultimate Recovery:** 2,400,000 bbls. **Production to Date:** 45,000 bbls. **Rigs Running May 1, 1939:** 17. **Reserve:** 2,355,000 bbls. **Oil Outlets:** Pipe line to loading rack. **Gravity:** 39.2. **Principal Leaseholders:** G. H. Blankenship, Pres Cochran, Shell Oil Co., W. C. McBride, Inc. **Remarks:** Small tracts indicate close spacing.

INDIANA

POSEY COUNTY

HEULER

Means of Discovery: Seismograph. **Extent of Development:** Not defined. **Discovery Well:** Sun Oil Co.'s Deitz 1, SWc SE 1-7n-12w, completed June 21, 1938; initial, 75 bbls; Tar Springs sand, 1738 to 1744 ft. **Type of Structure:** Anticline. **Producing Formation:** Tar Springs sand, also classed as Waltersburg. **Average Sand Thickness:** 13 ft. **Area:** 1000 acres. **Ultimate Recovery:** 5,000,000 bbls. **Production to Date:** 53,000 bbls. **Rigs Running May 1, 1939:** 3. **Reserve:** 4,947,000 bbls. **Oil Outlets:** Pipe line to Ohio river. **Gravity:** 23.2. **Principal Leaseholder:** Sun Oil Co.

VIGO COUNTY

PRAIRIE CREEK

Means of Discovery: Seismograph. **Extent of Development:** Not defined. **Discovery Well:** Carter Oil Co.'s Paddock 1, C SE SE NE 16-10n-10w, completed, Aug. 31, 1937; initial, 25 bbls from Devonian, 2103 to 2149 ft. **Type of Structure:** Anticline. **Producing Formation:** Devonian. **Average Sand Thickness:** 22 ft. **Productive Acres:** 800. **Ultimate Recovery:** 3,500,000 bbls. **Production to Date:** 237,700 bbls. **Rigs Running May 1, 1939:** 2. **Reserve:** 2,263,000 bbls. **Oil Outlet:** Illinois Pipe Line Co. **Principal Leaseholder:** Carter Oil Co.

GIBSON COUNTY

GRIFFIN

Means of Discovery: Surface and subsurface geology. **Extent of Development:** Two wells completed, no dry holes to indicate field limit. **Discovery Well:** Amos & Fitzpatrick's Cooper 1, SE NW NE 13-3s-14w, completed Dec. 14, 1938; initial, 1000 bbls; McClosky lime, 2883 to 2890 ft. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 8 ft. **Productive Acres:** Not determined. **Ultimate Recovery:** 1,000,000 bbls, estimate. **Production to Date:** Shut in. **Rigs Running May 1, 1939:** 3. **Reserve:** 1,000,000 bbls. **Oil Outlets:** Sohio Corp. building 4-inch line. **Gravity:** 38. **Principal Leaseholders:** Continental Oil Co., Lesis Production Co. **Remarks:** Large structure indicated. Development has been retarded by high water on Wabash river and lack of outlet.

KENTUCKY

MUHLENBERG COUNTY

BELTON

Means of Discovery: Surface geology and seismograph. **Extent of Development:** Not defined. **Discovery Well:** Fred Phillips' Shearn 1; initial 280 bbls; McClosky lime, 1532 to 1542 ft. **Type of Structure:** Anticline. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 10 ft. **Productive Acres:** 100. **Ultimate Recovery:** 500,000 bbls. **Production to Date:** 14,800 bbls **Rigs Running May 1, 1939:** 3. **Reserve:** 485,200 bbls. **Outlets:** Tank cars. **Gravity:** 37.5. **Principal Leaseholder:** Fred Phillips and Phillips Petroleum Co.

HENDERSON & DAVIESS COUNTIES

BIRK CITY

Means of Discovery: Surface and subsurface geology. **Discovery Well:** Birk City Oil Co.'s Blackwell 1, completed April 22, 1938; initial 1200 bbls; McClosky lime, 1872 to 1874 ft. **Type of Structure:** Anticline. **Producing Formations:** McClosky lime and Jett sand. **Average Sand Thickness:** McClosky lime, 12 ft; Jett sand, not drilled. **Productive Acres:** 1200. **Ultimate Recovery:** 10,000,000 bbls. **Production to Date:** 935,000 bbls. **Rigs Running May 1, 1939:** 3. **Reserve:** 9,065,000 bbls. **Oil Outlets:** Sohio Corp. and river shipments. **Gravity:** 37.25.

HENDERSON COUNTY

CROYDON

Discovery Well: Sun Oil Co and Kentucky Natural Gas Co.'s Trigg 1, completed Feb. 21, 1939; initial, 335 bbls; McClosky lime, 2602 to 2605 ft. **Type of Structure:** Anticline. **Producing Formation:** McClosky lime. **Average Sand Thickness:** 10 ft. **Productive Acres:** 100. **Ultimate Recovery:** 500,000 bbls. **Production to Date:** 25,000 bbls. **Rigs Running May 1, 1939:** 2. **Reserve:** 475,000 bbls. **Oil Outlets:** Sohio Corp. 4-inch line to Ohio river. **Gravity:** 37.2. **Principal Leaseholders:** Sun Oil Co., Kentucky Natural Gas Co.

SPOTTSVILLE

Means of Discovery: Surface and subsurface geology. **Extent of Development:** 3 producing wells and 4 dry holes. **Discovery Well:** Magnolia Petroleum Co.'s Green 1, completed October 25, 1938; initial production, 675 bbls, from McClosky lime, 2176 to 2178 ft. **Type of Structure:** Anticline. **Average Sand Thickness:** 8 ft. **Productive Acres:** 50. **Ultimate Recovery:** 200,000 bbls. **Production to Date:** 32,480 bbls. **Rigs Running May 1, 1939:** 2. **Reserve** 167,520 bbls. **Gravity:** 40.5. **Principal Leaseholder:** Magnolia Petroleum Co.

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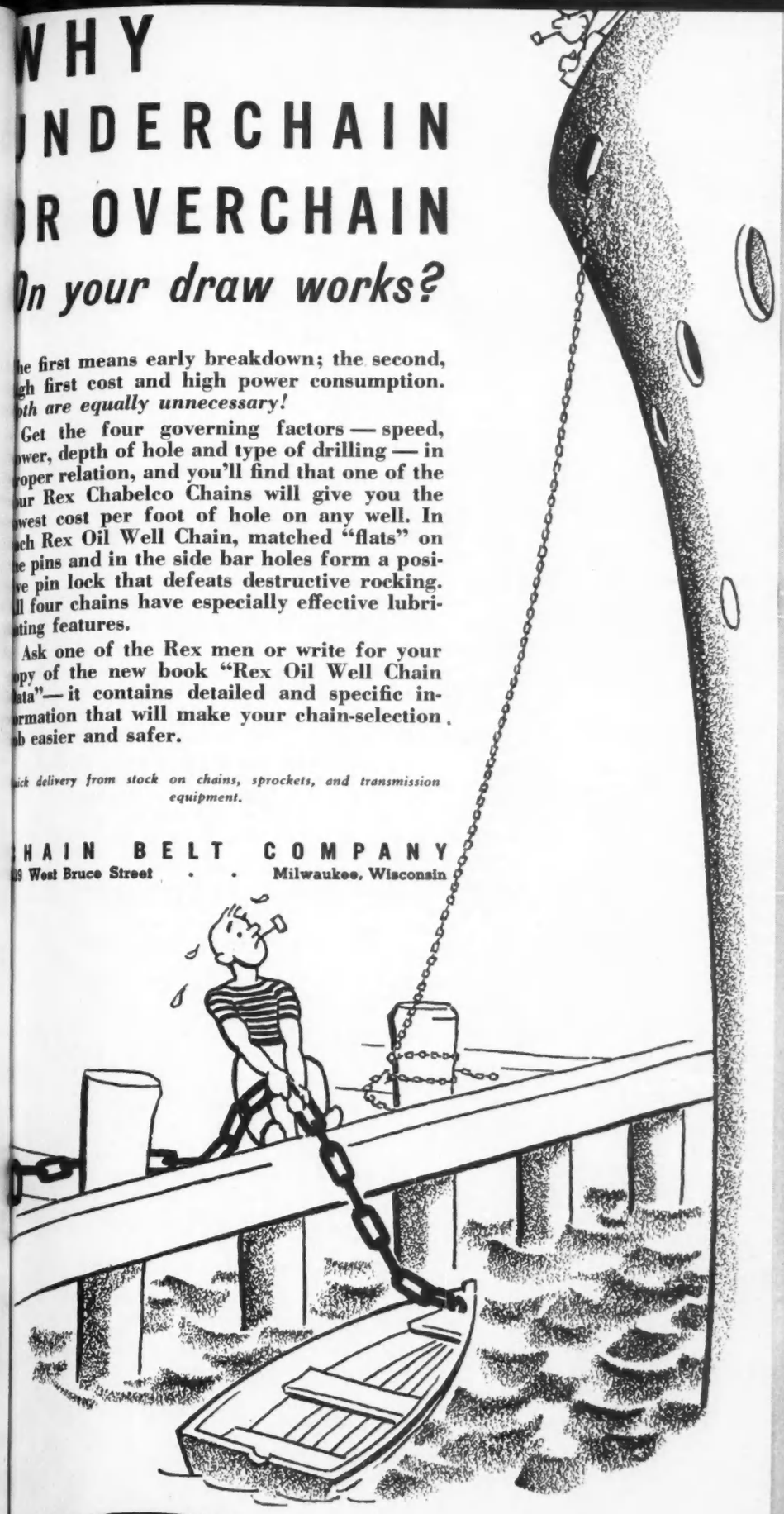

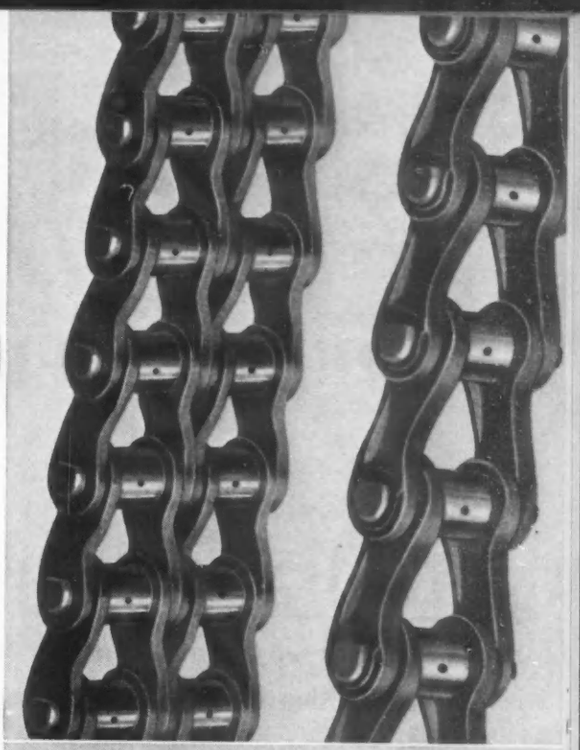

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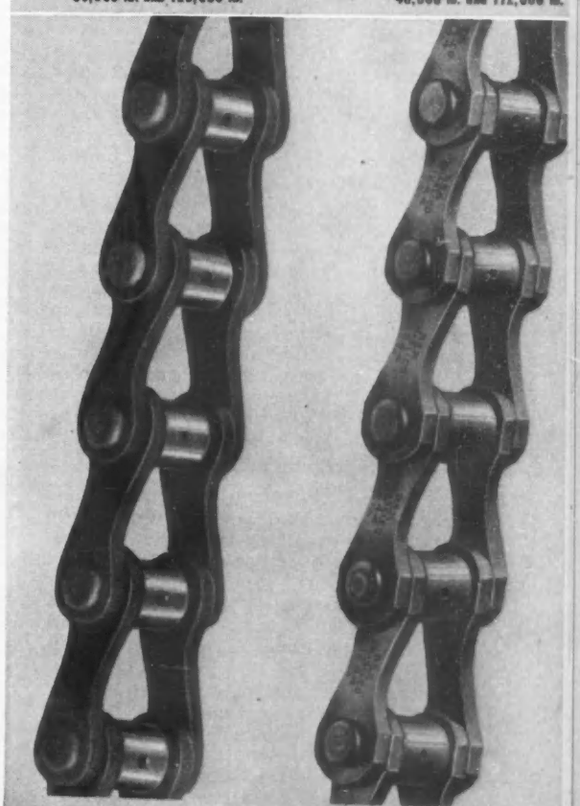

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Edited by
WM. V. GROSS, Associate Editor

Mexico's Line to Pacific

Japanese, German and U. S. interests trying to get franchise for oil line across Tehuantepec Isthmus, is report . . . Mexico is unable to finance project.

WHETHER Mexico will grant foreign enterprise the right to construct the long talked of oil pipe line across the Isthmus of Tehuantepec has become a question of growing discussion in Mexico City oil circles during recent weeks by reason of reports in well informed quarters that three different groups are seeking this concession.

Japanese interest in the project antedates the oil expropriation. A growingly serious consideration by Germany, emphasized by the fact that Germany manufactures a lot of pipe, is reported in view of the barter arrangements now existing between that country and Mexico. The third group reported interested is said to be made up of United States interests with independent oil connections.

Mexico has long been cognizant of the importance of a Pacific outlet for petroleum. This has been especially emphasized since the oil expropriation through efforts of the government to expand its export markets. Japan is definitely a potential taker of Mexican oil, but the cost of transport is now an obstacle in view of the availability of oil from California.

Government Interested

That the Mexican government is more than casually interested in the pipe line project is borne out by recent steps to improve port facilities at Salina Cruz, the Pacific terminus of the Tehuantepec railroad and the logical West Coast terminus of an isthmus pipe line.

Early in May, the Federal Department of Communications and Public Works, announced that plans for immediate improvement of Salina Cruz for handling oil exports would be presented to President Lazaro Cardenas upon his return from tour of the northern states. This project, the announcement estimated, would cost approximately $400,000.

Later in May, the Workers Administration of the National Railways system, which now includes the Tehuantepec line, announced repair and improvement of the Tehuantepec line would be started very soon by reason of the growing importance of the port as an outlet for oil. It was announced that cooperation of President Cardenas and the Department of Communications and Public Works had been assured.

Unable to Finance Line

While these steps represent plans for but minor expenditures compared to the cost of constructing a pipe line across the isthmus, they are interpreted as indicating the way the wind blows. Due to the great expense of building a pipe line across the isthmus, much doubt is expressed in economic circles of the ability of the Mexican government to undertake at this time the financing of such a huge project. All of which lends credence, in view of Mexico's effort to increase the sale of oil, to reports that foreign interests may be granted the right to finance the project.

Cost Estimates

It is estimated in oil circles of the national capital that an oil carrier across the isthmus would cost from $10,000,000 to $15,000,000. The distance from Puerto Mexico, Gulf of Mexico terminus of the Tehuantepec railroad, which the route of the line would most likely follow, is about 145 miles as the crow flies. Minatitlan, where the pipe line would pick up its load, is just southwest of Puerto Mexico.

A 10-inch pipe line (the size considered feasible for the project) would cost $2.50 a foot, it is pointed out in oil circles, or $13,200 a mile. Cost of the pipe alone would be close to $2,000,000.

How many booster stations would be necessary would have to be determined, as would other factors in construction of such a line, by detailed engineering survey. A Standard Oil Company subsidiary's pipe line out of Tampico uses a booster station every 10 to 15 kilometers. Should the proposed Tehuantepec line require stations at such intervals, a total of twenty or more would be necessary as the distance (145 miles) is about 230 kilometers.

A 10-inch line would carry about 25,000 barrels of oil a day.

U. S. Money Reported Interested

The proposal to construct a line with production in Tehuantepec at its present volume lends strength to the report that the independent group from the United States is seeking, together with the pipe line franchise, a concession to develop Tehuantepec oil. This group is reported to be represented by Harold R. Pauley, vice president of Petrol Corporation, Los Angeles, which has production in California, a skimming plant and asphalt and road oil plant in the Los Angeles area; United States Senator Sheridan Downey of California, and John B. Elliott, Los Angeles.

The reported German interest angle gained support with the recent departure from Mexico City of Baron Heinrich Ruedt von Collenberg, Nazi Minister to Mexico, for Berlin at the call

To Publish Book

C. C. McDermond of Maracaibo who will soon publish another edition of "Who's Who in Venezuela."

of Hitler to report on conditions in Latin American countries. Reports had it that von Collenberg took with him complete plans for the construction of a pipe line across the isthmus.

Japan's Proposal

Reliable sources credited the Japanese with making overtures to Mexico for establishing Japanese enterprises at Puerto Mexico, and Salina Cruz prior to the oil expropriation. This proposal included construction of a pipe line across the isthmus to connect the two ports, the modernizing of Salina Cruz and improvement of the rail line. Japan was said to have assured Mexico that it would take all the oil Mexico could produce, and would put up a sum in advance for development and exploitation of government oil lands.

The Japanese proposal was turned down by Mexico as was a later proposal. Then expropriation and the difficulty of exporting oil to the democracies came about.

Reliable sources say Japan has renewed the proposal to build the line, offering $10,000,000 for construction and other concessions. Negotiations over the amount of cash deposit are reported, the government asking five percent or $500,000 while the Japanese are holding out for one percent, or $100,000.

No Rehearing on Smoot

Reports are the Mexican senate will not reach the Smoot expropriation case during the current extraordinary session, due to certain technical difficulties encountered by the investigating committee, and that action will be postponed until the September session of the legislature.

It will be recalled that justices handling the case who turned in a decision favorable to Smoot, who had taken exception to the government's action in expropriating his properties, were subjected to severe criticism by nationalistically minded government and labor officials.

Labor Unsettled

Regarding labor conditions in Mexico related to adminstration of the oil business and their bearing on present negotiations between the government and the expropriated companies directed toward a common understanding between both sides, several situations have developed in the last fortnight.

Workers of the Vera Cruz terminal called a strike June 2 because their demand for 80,000 pesos increase in annual wages was countered by an offer on the part of the employers to increase the wages only 50,000 pesos.

Protest Negotiations

Workers of the government-controlled oil fields and distributing organization protested against continuance of negotiations between Donald Richberg, representative of the expropriated companies, and President Cardenas, claiming that Mexico is being too lenient with foreign countries. They ask to be given complete control of the oil industry, pointing out that workers have been given control of the National Railways.

Two leaders in the Confederation of Mexican Laborers in Vera Cruz, Alfonso Palacios, general secretary, and Raul Solis, dissenting leader, have been expelled in a gesture of pacification to the chapter members.

Appeal Not Applicable

Status of appeal of other companies listed in the Mexican expropriation decree of March 18, 1938, was not affected by the recent decision of the Supreme Court of Mexico which upheld a previous decision of a lower court denying an appeal of Franco Espanola Oil Company, an affiliate of Consolidated Oil Corporation, against expropriation of its properties on the ground that the company was not listed in the expropriation decree.

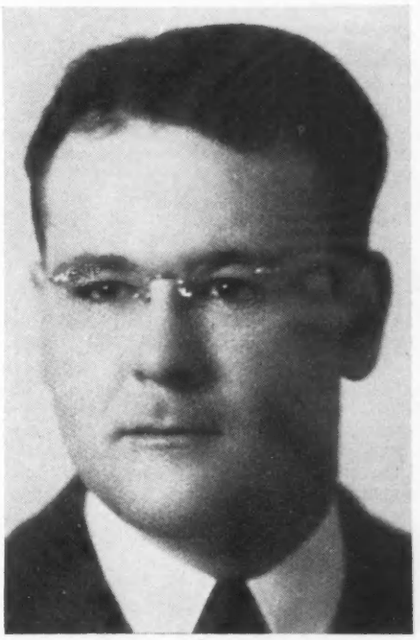
The court held that the appeal should have been directed to the Ministry of National Economy, and not to the courts.

The same ruling held with reference to a similar appeal made by Erreons del Golfo, an affiliate of Mexican Eagle Oil Company. The appellant previously had obtained a favorable ruling, so the supreme court's decision constituted a reversal.

"Mexico's recovery of its petroleum reserves is definitely assured; we have the right to defend our sovereignty, and fortunately in this case that right has been recognized by every country in the world," said President Cardenas last week upon his arrival at Pilares de Nacozari.

Students of the petroleum problem in Mexico were at loss to account for a reason for the president's statement, inasmuch as the constitution of the nation had clarified such a status years ago and there had never been any argument on the point brought out by Cardenas.

Grooming for South America



Clark A. Gruver of Augusta, Kansas, graduate petroleum engineer of the University of Oklahoma, is nearing completion of a six-weeks field training course with the Magnolia Petroleum Company in Louisiana, Texas and Oklahoma before reporting for duty with the Socony-Vacuum Oil Company in Venezuela.

King Ibn Saud opens new Ras Tanura oil terminal

Ras Tanura, the new oil terminal on the east coast of Saudi, Arabia, and in Hasa province, recently was officially opened by King Ibn Saud of Saudi, Arabia, in a five-day ceremony climaxed when the king turned a valve to allow oil to flow from the 40-mile, 10-inch line from Damman field into the tanker "D. G. Schofield."

A. S. Russell, director of Standard Oil Company of California, represented his organization and The Texas Company at the ceremonies, and several officials of California Arabian Standard Oil Company, the operating branch, were present to help entertain the king and guests, numbering about 2500.

British wildcats continue without important results

Of nine wildcats drilling in England in mid-May, none reported showings of commercial importance, though D'Arcy Exploration Company was reported testing in Carboniferous limestone at 3272 feet in the Hardstoft well in Derbyshire. Deepest of the currently active tests is this company's Eksdale 2, near Whitby, reported drilling in Permian limestone slightly below 4250 feet.

Turner Valley allowable raised to 22,500 barrels

Alberta Petroleum & Natural Gas Conservation Board has increased the allowable production of the Turner Valley field from 19,500 barrels to 22,500 barrels daily to meet the increased demand for refined products. The increase, which became effective May 15, puts the present output well ahead of the corresponding period of last year and within 5500 barrels of the record 28,000-barrel allowable that prevailed for a short period last fall when harvesting operations were at their peak.

Three wells under the new allowable are permitted to produce in excess of 600 barrels daily, while another 8 wells may produce more than 500 barrels.

Money budgeted for further exploration in Philippines

A budget of $100,000 (U.S.) has been approved for the first year of geological work in the Philippine Islands under direction of National Development Company, a government organization which has advantage of H. Foster Bain, former head of the United States Bureau of Mines, as advisor on mineral matters.

Appropriation of the money for preliminary exploratory work followed a decision of President Quezon of the Philippines, not to accept the bid of Socony-Vacuum Oil Company, reputedly sole bidder for development of supposedly potentially petroliferous areas.

The following men recently have been appointed to carry on exploration for National Development Company: Grant Corby of Los Angeles, director; Dr. Joseph Hollister, Dr. Willis Popenoe, Dr. R. M. Kleinpell, G. Anderson,

and Mr. Nelson. Some of the foregoing are retained on a part time basis. Corby will continue as a consultant for Far East Development Company.

It is expected their initial efforts will be directed at Cebu, Bondoc Peninsula, Tayabas, Leyte, and the Cayagan Valley in Cayagan and Isabella Provinces. Most of these areas have been examined in the past by oil company geologists.

Far East Development Company is drilling at San Andreas, Tayabas. At last reports the well, No. 2-A, was down to 372 feet in soft formation. A harder formation was expected near 525 feet, at which depth a change over from cable to rotary tools was contemplated. Well No. 2 had a slight showing of oil and gas at 540-42 feet. American drillers are on the job.

Canadian Fields

Steveville wildcat may be abandoned as technical failure, but offset will be drilled immediately; Turner Valley expected to shatter records in 1939.

ANGLO-CANADIAN OIL COMPANY'S Steveville 2, Legal Subdivision 4, Section 14, Township 20, 11-w4, which blew out and indicated a new pool on the Steveville structure 150 miles east of Turner Valley field, may be abandoned as a technical failure in the Madison lime, but a new hole will be put down on an adjoining location immediately. Meanwhile, machinery was being installed at the company's Steveville 1, Legal Subdivision 2, Section 13, Township 21, 12-w4, 7½ miles southwest of No. 2, which had casing set to the top of the lime at 3178 feet.

"Following the blow-out at No. 2, it ran wild for several hours and was brought under control only after 50,000 pounds of mud weighting material and 300 barrels of water had been pumped into it," said a company statement explaining the difficulty. "During the first 18 hours the well was on test it flowed at a rate of approximately 250 barrels per hour of liquid, of which 45 percent was oil and 55 percent water and mud."

It is believed that bottom water has been pulled in, due to the well blowing wild for several hours, and in clearing the well after it was brought under control. Officials are of the opinion that a new structure has been opened up, and when proper tests have been made, satisfactory results will be obtained. The well continues to produce a large volume of gas in addition to the oil and water when flowing under high back pressures. Efforts are still being made to overcome the difficulties.

Had Benton Shows Also

The wildcat, according to Joseph S. Irwin, geologist who mapped the structure, passed through several saturated sand sections in the Bentons, between 2500 and 2900 feet, which may be tested if commercial production is not obtained in the Madison. Another possible producing horizon on this structure, which many geologists believe has greater possibilities than the Madison, is the Devonian lime, which would be found at about 4500 feet.

The strike, made two weeks ago, is important because of its comparative shallow depth and because the structure promises a heavy crude. A supply of heavy crude would increase the interest of British capital in construction of a pipe line from Alberta to the Pacific Coast.

Indications that production records for the Turner Valley field would be shattered this year came last week when the Alberta Petroleum and Natural Gas Conservation Board increased the field's allowable from 22,500 to 25,000 barrels daily. It was the third increase in a period of four weeks, and brings the allowable to 150 percent above the 10,000 barrels daily that had prevailed during February and March.

The new allowable will result in monthly production in excess of 750,000 barrels per day, and this figure was exceeded by only two months during 1938. With further increases in the allowable expected as the peak consuming season approaches, the 1938 record production figure of 6,742,039 barrels is expected to fall.

Allowables Revised

Revised well allowables bring four wells above the 700-barrel-a-day mark, while an additional 7 are permitted to produce between 600 and 700 barrels daily. Royalite Oil Company's 38 leads the field with 816 barrels, an increase of 131 barrels from the former allowable of 685 barrels.

Turner Valley interest was divided between two widely separated west flank tests. East Crest Oil Company's No. 4, Legal Subdivision 8, Section 6, Township 19, 2-w5, gun-perforated casing and treated Madison lime with 6000 gallons of acid. It was closed in to build up pressure. Three miles west of Home Oil Company, Ltd.'s Millarville 2, completion of several months ago which provided a 12-mile extension to the proven crude area of Turner Valley, National Petroleums, Ltd.'s 3 was drilling below 3000 feet. Geologists differ as to whether the test is on an extension of the Turner Valley structure, or on a new structure named by some the Waite Valley structure. Located on Legal Subdivision 3, Section 25, Township 20, 4-w5, it obtained an encouraging gas showing in the Cardium at 780 feet.

A reduction from 15 cents to 9½ cents in the pipe line carrying charge for crude from Alberta's Turner Valley field to Calgary and a cut from 5 to 2½ cents in the charge for loading crude at the Calgary terminus into tank cars for shipment were recommended last week by the McGillivray Royal Commission investigating the Alberta oil industry. The recommendations will become effective with issuance of an order-in-council by the provincial government.

The new rates, first set under recently approved legislation declaring pipe line facilities of the Royalite Oil Company to be a common carrier, follow an extensive investigation launched late last year and during which testimony of United States and Canadian engineers and geologists was taken on the probable reserves of the field and its probable life.

The commission also included in the common carrier system storage and loading facilities at Calgary owned by Imperial Oil Company, but used as part of the pipe line system by Royalite, its subsidiary.

Field Life 18 Years

With widely varying estimates on the probable life of the Turner Valley field submitted during the pipe line phase of the investigation, the commission took a figure approximating that of Dr. B. B. Boatright, Houston, of the petroleum engineering firm of Parker, Foran, Knode and Boatright, who set a period slightly in excess of 18 years.

"We have found that on an estimated throughput of 6,000,000 barrels per year, the life of the Turner Valley oil field may be conservatively estimated to be at least 18 years," the commission said.

"As to the suggestion that it may prove difficult to obtain capital necessary for drilling operations to produce oil in quantities equal to the 1938 volume and the further suggestion that the discovery of other oil fields in which oil can be obtained from shallow wells at less cost than in the Turner Valley field may have the effect of stopping drilling operations in that field, we think that these suggestions are fully met by the evidence of Dr. Boatright to the effect that the experience of the past shows that wherever there has been a real oil field, its development has not been prevented by lack of capital or by the existence of other fields in which oil wells can be drilled at less cost.

Expect No Cuts

"As to the suggestion that the activities of the Conservation Board of Alberta may reduce the throughput in the future below the 1938 experience, we have accepted the evidence of F. G. Cottle of the conservation board to the effect that it is anticipated that control by the board will have the effect of increasing rather than decreasing the throughput in the future.

"As to the suggestion that the throughput will be reduced because the Western Canadian market will be lost to foreign competitors and, in particular, those in the Illinois field, we have found that it has not been established before us, by reference to long term contracts or otherwise, that present competition from the Illinois field is anything more than the result of uncontrolled flush production."

MEN IN THE INDUSTRY'S NEWS

F. W. FLOYD, CARTER OIL VICE PRESIDENT IN CHARGE OF PRODUCTION, BEING TRANSFERRED TO VENEZUELA

R. L. CLIFTON TO ACT AS PRODUCTION MANAGER FOR SEVERAL U. S. DISTRICTS

F. W. FLOYD, vice president and manager of production, Carter Oil Company, Tulsa, is being transferred to Caracas, Venezuela, where he will direct operations for Standard Oil Company of Venezuela.

Although the change is effective as of June 15, Floyd will leave about July 1 for his new post. He has had previous experience in South America as geologist for Tropical Oil Company, covering Colombia. He joined Carter Oil Company in 1923 after advanced study in geology at University of Chicago. After serving the company both as geologist and production engineer, he was promoted to production manager, and in 1938 assumed the post of vice president in charge of production.

R. L. Clifton, general superintendent of production and assistant to Floyd, will temporarily direct production activities for Carter Oil Company. Under his jurisdiction will be production in Oklahoma, Kansas, Illinois, Indiana, Michigan, Kentucky and the Rocky Mountain area. Clifton joined the company in 1917, in the production department, and soon became field foreman. Through successive promotions he saw activity in the Osage area, Seminole, Burbank and other fields, returning to Tulsa in 1935 as general superintendent, being promoted to assistant general manager in 1937.

F. W. FLOYD

WM. A. SLATER, general manager of Gulf Refineries, has been elected to vice presidency of Gulf Oil Corporation and Gulf Refining Company by the board of directors. Slater, a native of Warren, Pennsylvania, and a graduate of Pennsylvania State College, class of '07, joined the Gulf organization in October of the same year as a chemist in the testing laboratory of the Port Arthur, Texas, refinery. In 1911, Slater was chosen to supervise construction of a new Gulf refinery at Fort Worth, Texas, where he remained as superintendent until, in 1916, he returned to Port Arthur as assistant superintendent.

After eleven years in that post, he was appointed, in 1929, to the position of general superintendent of Gulf refineries in Texas. He served in this capacity for six years until he was transferred to Pittsburgh as general manager of all Gulf refineries. The election of Slater as vice president of Gulf Oil Corporation and the Gulf Refining Company marks a new climax in his unbroken 32-year record of service with the Gulf companies.

Thomas J. Sullivan, who joined Gulf in 1921 as head of the acid department at Port Arthur and has been assistant general manager of refineries since February of this year, has been appointed to succeed Slater as general manager of Gulf refineries. Sullivan, during his 18 years with Gulf, has held the positions of superintendent of gasoline compression plants, assistant general superintendent of the Port Arthur refinery, and general superintendent of all Gulf refineries in Texas.

WILLIAM H. FRANCIS, director, vice president and general counsel for Magnolia Petroleum Company and Magnolia Pipe Line Company, Dallas, will qualify for retirement on July 1. He began practicing law in 1907, serving his apprenticeship with a Fort Worth firm for $30 per month. He entered the services of Magnolia Petroleum Company as an attorney in 1912, and became general counsel in 1921.

L. P. ST. CLAIR recently resigned as chairman of the board of directors of Union Oil Company of California, but will continue as a director of the company. He had been connected with the organization for more than 30 years and expressed a desire to be relieved of active management problems. St. Clair is president of Independent Oil Producers Association, a San Joaquin Valley Producers' Association.

ELTON V. McCOLLUM has resigned as control geophysicist of Continental Oil Company at Ponca City, to accept a position as geophysicist with Mott-Smith Corporation, Houston. He will be located in the offices of Mott-Smith Corporation in the Shell Building.

McCollum has been associated with the Marland and Continental Oil Companies since 1926. During his earlier years with these companies he was actively engaged in geophysical field work, employing primarily gravity and seismic methods. For the past six years as control geophysicist his duties have consisted of interpretation of seismic and gravity-meter surveys and supervision of field parties.

JEROME K. CROSSMAN, who on May 1 became president of Ryan Consolidated Petroleum Corporation, announced removal of the company's offices from Tulsa to the First National Bank Building, Dallas. Making the move were Arthur S. Jones, assistant secretary and treasurer; Vic E. Baum, production superintendent, and Victor H. Jones and Sam W. Jennings, office workers. S. G. Hootkins, Dallas, joins the company as director of operations. Other officers of the firm, which operates in Texas, Oklahoma and Kansas, are Phelan Beale, New York, and Lloyd Rowland, Bartlesville, vice presidents, and D. Laemmel, New York, secretary-treasurer.

JOHN BRUUN, Grayling, Michigan, has been elected president of McClanahan Oil Company, to succeed Walter L. McClanahan, organizer of the company. Esbern Hanson was re-elected vice president and A. H. Ledbetter, re-elected secretary-treasurer.

McClanahan, who continues as a director, said he might set up a new company. He has interests in several producing properties in the shallow Southwestern Michigan play. He came to Michigan from the Southwest in 1928 and after a string of 22 dry holes, opened the Greendale Extension pool in July, 1931. The well caught fire and McClanahan and 22 others were trapped. He escaped but his wife and 10 friends died. From the hospital bed he went on to become the best known figure in Michigan oil, organizing McClanahan Oil Company in 1934. Later in 1936 he organized McClanahan Refineries, Inc., building a plant at St. Louis, Michigan. This plant was merged and absorbed early this year by Leonard Refineries, Inc., of Alma.

HENRY A. LEY, president of American Association of Petroleum Geologists, will speak before the Ardmore (Oklahoma) Geological Society on June 6. All geologists in the vicinity on that date are invited.

JAMES W. "JIMMY" BRADBURY, general agent of Mexican Gulf Oil Company at Tampico, Mexico, has been transferred to an executive position with Mene Grande Oil Company in Venezuela. Before leaving for Venezuela, he will spend a few weeks' vacation in England.

Bradbury entered the service of Gulf Oil Corporation 28 years ago last January. In July, 1921, he went to Tampico as assistant to H. K. V. Tompkins, then general agent of the company. On January 1, 1934, he was appointed general agent.

May 27 employees of Mexican Gulf tendered Bradbury a farewell banquet. The following day a barbecue was given for him at the Prieto Terminal of the company, attended by all employees of

the company and their families, as well as 200 or more friends not connected with the company.

Franklin F. Devine, who has been with Gulf Oil Corporation for nearly 26 years, and for the past five years assistant general agent of Mexican Gulf, has been appointed general agent at Tampico.

J. J. SANGER and Granville C. Kerloy have organized the Charleston Development Company as a Texas corporation. Headquarters have been established in San Angelo.

WALTER R. KRAUSE, secretary-treasurer of Kewanee Oil Company, has returned to his office in Titusville, Pennsylvania, following a visit to Mid-Continent oil centers.

W. S. CRAKE has resigned as petroleum engineer for United British Oilfields of Trinidad, Ltd., and will return to the United States. Crake previous to going to South America was with Shell Oil Company at Houston.

R. S. ELLISON, president Stanolind Pipe Line Company, is returning from a business trip to New York and eastern points.

S. C. GREENBERG, Aaron Kalmans and Daniel Schlanger have organized the Relru Oil Company with headquarters in Houston.

D. M. RUMPH, Effie G. Rumph and J. M. Rumph are incorporators of the M. E. Oil Company, which was granted a Texas charter last week. Headquarters have been established in Fort Worth.

JOHN T. HAYWARD, chief petroleum engineer for Barnsdall Oil Company, was in Fort Worth last week.

N. A. TEDFORD, Homer Easterwood and Fred M. Wood are principals of the Commercial Drilling Company, which has established headquarters at Taft, Texas.

C. F. MILLEDGE, Thomas S. McCaskey and Fred W. Allen, Jr., have organized Terouche Oil Corporation as a Texas corporation with headquarters in Houston.

PARK HUNTINGTON, petroleum engineer for Stanolind Oil & Gas Company, discussed "Methods of Making Bigger and Better Oil Wells" before a civic group at Casper, Wyoming, last week.

R. LLOYD WHEELOCK is holding his annual barbecue on his ranch seven miles east of Corsicana June 10.

DIED:

JOHN S. BONNER, 66, pioneer Houston oilman, died May 30 after a year's illness. Bonner, who retired from a vice presidency in Humble Oil & Refining Company in 1935, and from the directorship of the sixth district of the Works Progress Administration last May, began his career in 1896 with Davis Oil Company of Houston. When that company was absorbed by Southwestern Oil Company in 1900 Bonner became president of Southwestern, which he left in 1903 to form Bonner Oil Company. Upon acquisition of part of the Bonner Company properties in 1919 by Humble Oil & Refining Company he became vice president and sales manager of the Humble firm, a post he held until 1935, when he was appointed director of the W.P.A. district. Surviving are a wife, a son, a brother, and two sisters.

GALE R. NUTTY, 68, retired oil company executive, died May 31 in Pittsburgh, Pennsylvania. Nutty retired in 1935 as director and vice president of Gulf Oil Corporation, which he joined in 1902 as general sales manager. From 1929 to 1935 he was president of Gulf Refining Company, a subsidiary. He is survived by his wife.

More than 140,000 yards of material were moved by tractors when this 2½ million barrel crude oil storage reservoir was constructed near Torrance, California.

THE WEEK'S NEWS SUMMARIZED

Allowables

Allowables adopted by seven prominent producing states indicate comparatively strict control of crude production during June. These seven states, which produce 90 percent of the United States production, have adopted June allowables totaling 126,414 barrels daily under Bureau of Mines estimate of demand. Thus, production may be somewhat below market requirements and the industry may be able to take some oil and gasoline out of storage. In May, these same seven states had allowables but 38,312 barrels under the Bureau of Mines estimates. Consequently, June production promises an even better statistical position.

Texas contributed heavily to the control of crude production, when its railroad commission last week issued an order requiring all wells to be closed both on Saturday and Sunday every week during June. This replaced a prior order providing for but six shutdowns instead of the present eight. The commission estimates Texas will have a daily allowable of 1,313,222 barrels under this program, which is 114,078 barrels under the Bureau of Mines estimate of consumer demand from the state.

Texas' next statewide proration hearing is scheduled for June 12. Emphasis probably will be placed on market demand for crude oil, as it is the first hearing since Commissioner Jerry Sadler publicly proposed to open up Texas oil fields if other states did not curtail more drastically.

Proration in both California and Michigan entered new phases last week.

In California, the new uniform allowable formula became effective on June 1. Although many opposed the plan, general feeling is that the situation will improve. The new system establishes a minimum daily output of 10 barrels for any well, and fixes 250 barrels as the maximum, with allowables to be uniformly fixed on a graduating scale according to ability to produce.

In Michigan, the first order issued under the new oil conservation act established a 10-acre spacing plan and fixed 200 barrels daily as the maximum output of wells in flush fields. The order affected only shallow producing areas in Southwestern Michigan, and the Freeman-Redding field. In the latter field a 250-barrel allowable was given to wells located on 20-acre spacing. Wells situated on less than 10 acres in any of the affected fields are to be cut proportionately below the maximum allowable.

Anti-Trust

A grand jury investigation of alleged price fixing on the Pacific Coast got underway last week, with selection of the grand jury. Present plans are for several hundred witnesses to be questioned. The jury will meet about three days weekly until their work is completed.

Meanwhile, developments at Washington indicated that conferences between the Department of Commerce and oil firms facing anti-trust prosecutions may be resumed in the near future. An initial conference was held several weeks ago. The Department of Commerce hopes to act as intermediary between the Department of Justice and industries involved in anti-trust investigations. The theory being that commerce department officials can discuss plans for settlement that cannot be properly discussed with the Department of Justice.

Legislation

A delegation from oil producing states last week asked President Roosevelt to request Congress to extend the Interstate Oil Compact Act, due to expire September 30. A measure providing for the continuance of the compact is expected to be introduced shortly, and is not expected to encounter difficulty in passing.

Prospects for high oil taxes in Texas were dimmed last week, when two Texas House tax bills designed to raise funds for pension payments were reported unfavorably by the Senate Affairs Committee. These were a bill increasing taxes on gross receipts and the omnibus tax bill, which provided, among other things, for a graduated crude oil production tax. Unless the House capitulates and approves the Senate sales tax resolution, it appears the session will end without a tax bill to supply pension funds.

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Allowable Picture

Stricter production control indicated for June . . . New Texas order requires two additional shutdowns . . . Michigan issues first proration orders . . . California's uniform allowable becomes effective.

June allowables promise effective crude control

Comparatively strict curtailment of crude oil production in June is indicated by the program of allowables in the seven prominent producing states where output is regulated.

Those seven states, which account for almost 90 percent of United States production, have adopted June allowables that are in the aggregate 126,414 barrels daily, or 4.1 percent, under the market demand for domestic crude, as estimated by the Bureau of Mines.

Outlook Is Favorable

This allowable program indicates that production will be held somewhat below market requirements, and that it will be possible for the industry to take some crude out of storage, as it has wanted to do.

It is true that actual production fails to stay within prescribed limits in some states, notably California, where proration is voluntary and not based on a state proration law. But the June allowables are sufficiently strict to indicate that actual output will be somewhat less than the markets will require.

Results in May

In May the same seven states had combined allowables 38,312 barrels daily or 1.3 percent under the Bureau of Mines estimate of demand, and those allowables resulted in a withdrawal of a little over a million barrels of crude from storage between May 1 and May 20. The decline of crude stocks resulted partially from the exceptionally large runs to refinery stills during May. But even if refinery runs should be more moderate in June, they should absorb the allowable production and also some storage oil, considering the stricter allowables.

The seven states referred to are: Arkansas, California, Kansas, Louisiana, New Mexico, Oklahoma, and Texas. June allowables of those states are shown in an accompanying table, along with indicated market demand, as estimated by the Bureau of Mines.

Texas reinstates Saturday shutdowns

The Texas Railroad Commission has issued a new shutdown order requiring all wells in Texas to be closed both Saturday and Sunday every week during the month of June. This replaces a prior order providing for shutdowns on each Sunday and two of the Saturdays during June. The new order was signed by all three members of the commission.

The commission stated that the basis allowable of the state on June 1 was 1,740,576 barrels. However, because fields will be shut in for eight days during the month, the daily average allowable on the basis of the figure above will be 1,313,222 barrels. The indicated production for Texas under this allowable will be about 114,000 barrels below the consumer demand for Texas oil as calculated by the United States Bureau of Mines. In May the state had a net allowable of 1,393,077 barrels.

Commissioner Jerry Sadler said in a prepared statement issued last Friday:

"This allowable for Texas has been set under the bureau's estimate for the purpose of giving other oil-producing states an opportunity to make adjustments in conformity with the demand. I am in favor of keeping our production down for the next 60 days so that the other states may put their house in order.

"Too much has been said about the great amount of oil produced in Texas. This time we are lowering the allowable to set an example for those who have talked so much, and to show them that we are acting in good faith and expect them to make necessary reductions. In this manner we can keep the oil industry in good shape."

The action was taken by the commission at the request of Senator Joe Hill of Henderson who has been the principal opponent of closing down the East Texas oil field. Concerning the situation Hill said:

"The Railroad Commission is to be congratulated on their far-sighted action in today entering the order to shut down production throughout Texas both Saturday and Sunday for the month of June. The market situation had become very unfavorable and oil was being sold in great quantities at less than the posted price. This situation would inevitably result in a price break which would adversely affect every producer and royalty owner in Texas, and tend to produce consequences which none of us, particularly at this moment, desire.

"Apparently it was the thought of some of the big producing companies that they would be able to fill their empty storage later with cheap oil to the hurt of the people of Texas. The commission has acted wisely in entering this order, and I am confident that their action is more than justified by the present unfavorable situation which has shown our state to be producing actually around 100,000 barrels in excess of the Bureau of Mines' figures.

"It is to be hoped that other oil producing states will follow the action taken by the commission, and offer to Texas a program of cooperation to which the commission has shown itself justly entitled. I believe that the producers and royalty owners will be better served by the entry of this order than they would have been had a break in the price structure developed. This move on the part of the commission will undoubtedly prevent such an eventuality."

Fields Exempt

The following fields will be permitted to operate on Sunday because they produce large quantities of water, with the exception of the Rodessa field which is allowed to produce continuously since it is a part of the same field producing in Louisiana and Arkansas:

Eckert, Minerva Rockdale, Somerset, Mission River, Barbers Hill, Boling, Goose Creek, Hamman Deep, High Island, Hitchcock, Old Hull, New Hull, Lochridge, New Mykawa, Old Ocean, West Columbia, New West Columbia, Charamousca, Midway, Corsicana, Currie, Mexia, Powell, Richland, Wortham, Wortham Shallow, Cayuga, Big Lake, McMillan, World, Eaves, Garza, Hendricks, Leck, Shearer, Taylor Link, Tobarg and Rodessa.

Allowables Further Under Indicated Market Demand in June

STATE	Bureau of Mines Forecast of Demand	State Allowable Beginning of Month	Excess or Deficiency of State Allowable	Percent Excess or Deficiency
Arkansas	54,700	57,641	+ 2,941	+ 5.4
California	594,600	†590,000	— 4,600	— 0.8
Kansas	152,400	166,000	+ 13,600	+ 8.9
Louisiana	265,000	263,023	— 1,977	— 0.7
New Mexico	117,000	117,000	.....	.....
Oklahoma	450,300	428,000	— 22,300	— 4.9
Texas	1,427,300	*1,313,222	—114,378	— 8.0
Total for seven states	3,061,300	2,934,886	—126,414	— 4.1
Other states	429,700	.....	.....	.....
Total United States	3,491,000	.....	.....	.....

* Daily average net allowable, considering 4 Saturday and 4 Sunday shutdowns, water exemptions, and exemption at Rodessa.

† Recommendation of Central Committee of California Oil Producers.

Uniform allowable put in force in California

California's efforts to curb excessive crude production entered a new phase last week. On June 1, the new uniform allowable formula proposed by the fact finding committee for the petroleum industry as one means of reducing production, officially went into effect. It was approved and accepted by the central committee of California oil producers, after several months of discussion and consideration, but not without a scrap. Many operators opposed the plan, and many favored it, but representative members of the industry figured the best way to improve the situation was to work out the difficult angles and smooth over the problems, or else watch the industry go smash. With the adoption of the uniform schedule, there is a genuine feeling that for the next year or two, real prosperity would come to the petroleum industry. The new system of allocating production will undertake to treat every producing well fairly and equitably. It established a minimum daily output of 10 barrels for any well capable of yielding that amount and fixed 250 barrels as the maximum which any producer may flow any single day.

That the plan is what the producers have been wanting, is the opinion of Lawrence Vander Leck, chairman of the central committee. He believes the plan and its application will result in a better attitude toward curtailment.

In the meantime, a drive to prevent further waste of gas in the Montebello field has been taken by the state. Earl Warren, state attorney general, cracked down on this field last week when he filed suit in superior court in Los Angeles against 20 oil operators who are alleged to be blowing approximately 3,000,000 cubic feet of gas into the air yearly. He has asked for a restraining order to stop the wastage.

Order limits Michigan wells to 200 barrels

First order issued by J. P. Hoffmaster, director of conservation and supervisor of wells, under the new oil conservation act in Michigan, established a 10-acre unit as the basic drilling pattern and fixed 200 barrels daily as the maximum withdrawal for wells in all of the state's recognized flush fields. The order became effective June 1.

Hoffmaster issued the order under provisions of the emergency section of the act, stating in letters sent to operators in the affected areas, that the proration order was necessary to prevent unnecessary waste. The order, issued after a series of conferences of the advisory board, will be effective for 21 days in any event; longer if approved by the conservation commission following public hearings on the general order June 5, as provided by the act.

The order affects only shallow producing wells in Southwestern Michigan, and Freeman-Redding field, Clare County. The order fixes the proration maximum at 200 barrels per well excepting 20-acre locations (about 50 percent of the field) which has a 250-barrel per well allowable.

The order stipulates that the 200-barrel limitation shall be based on an average over a 30-day month period. Proration ranging around 150 barrels had been in effect by voluntary agreement in the Freeman-Redding field, but only in isolated instances had any type of proration existed in any of the shallow fields. The order provides that the 200-barrel figure is based on 10-acre well locations and wells on smaller locations shall be prorated down proportionately to the acreage in relation to 10 acres. Kent County has numerous wells producing and drilling on tracts ranging from ½ to 3 acres as does Bloomingdale. Most of the Columbia and New Salem wells are on 10-acre locations.

The order included stipulations on future locations announcing that less than 10-acre locations will be permitted only after every reasonable effort to pool small tracts has been exhausted.

How much the 200-barrel proration will actually cut production remained a matter of speculation. Columbia and Kent fields were expected to get the stiffest "pinch." Pipe lines are competing for oil in these areas. A representative of one company said he would protest the order on the basis that he could see no basis for the 200 barrels figure in relationship to waste and that it was limiting production far below actual market demand. The law enabled proration to prevent waste or to bring it down to market demand.

Texas sets statewide hearing for June 12

The Texas Railroad Commission has scheduled its next statewide proration hearing for June 12 at Austin. Because commissioners are agreed now that the shutdowns are necessary, an elaborate hearing is not expected.

However, emphasis will probably be placed on the market demand for crude oil, as the hearing will be the first to take place since Commissioner Jerry Sadler announced his proposal to open up Texas oil fields if other states do not cooperate in the curtailment program.

Anti-Trust Activities

Pacific Coast grand jury selected for alleged price fixing investigation . . . Department of Commerce may renew attempt to be intermediary.

Trust investigation starts in California

Investigation of alleged price fixing among a group of Pacific Coast oil companies got under way last Friday before United States District Judge Paul J. McCormick.

According to Joseph E. Brill, special assistant to the attorney general, this is only the beginning of a three-months hearing that will mean the questioning of several hundred prospective witnesses who will be asked to tell what they know about the petroleum industry in five Pacific Coast states. Hearings on the case will be conducted three days a week and based on the mass of evidence gathered by government experts during a two-year investigation. There is no telling how or when the case might be brought to a conclusion.

Jury Selected

Only intensive questioning resulted in the recent selection of a federal grand jury to hear evidence in the asserted monopolistic practices of nearly 100 Pacific Coast oil companies. This special inquisitorial body was sworn in by Judge McCormick a week ago. Howard R. Annin, consulting engineer, was appointed foreman of the body.

Oil men, attorneys and business men are expected to be paraded before the special grand jury to be questioned. They will be asked to tell what they can about complaints to the effect that various practices in the petroleum industry have resulted in the elimination of competition in the marketing of petroleum products. Brill will be aided by M. S. Huberman and Henry McClarnan, in handling the prosecution.

Oil firms to confer with government

Conferences between Department of Commerce officials and oil company executives facing anti-trust prosecutions by the Department of Justice may be resumed in the near future, it was learned last week.

An initial conference was held at the department several weeks ago, as part of the program of Secretary of Commerce Hopkins to act as intermediary between the Department of Justice and industries involved in anti-trust investigations, but it is understood no definite conclusions were reached.

The theory behind the secretary's plan is that the department can discuss with business interests plans of settlement of cases that cannot be properly discussed with the Department of Justice. Attorney General Frank Murphy, in explaining his attitude toward the anti-trust laws last month, indicated that such a step would be welcomed by his department.

As a further step in the experiment, department officials now are holding conferences with representatives of the potash industry, also under justice department fire.

If a workable procedure is arrived at, it is possible the mediation of controversies between industries and the government will be made an activity of a bureau of industrial economics which it is proposed to establish in the Department of Commerce.

Coffee charges independent groups work for majors

Carrying his fight against the "oil monopoly" to the floor of the house, Representative John M. Coffee (Dem., Wash.) last week disclosed in Washington that the organized industry plans the enactment of legislation that will except it from operation of anti-trust laws.

Charging that the Independent Petroleum Association of America and the Texas Petroleum Council are dominated by the major companies, Congressman Coffee on June 1 declared that "recent developments cause me to believe that the oil lobby is exerting every bit of its strength to deceive congress and independent oil men."

"They hope to defeat the Borah Pipe Line Divorcement Bill, the Narrington Marketing Bill, and to enact as permanent legislation the Connally Hot Oil Act; also its proposed bill, not yet introduced, that will except the oil monopoly from operations of the anti-trust laws," he said.

"The report and recommendations of the association meeting in Dallas June 6 has been prepared at the dictation of the monopoly, and they are already in the hands of the lobby in Washington to be used instantly upon their ratification and approval by the Committee of 36," he alleged.

"The president of the association, Mr. Roeser, is associated with Humble Oil & Refining Company, which in turn is owned by Standard of New Jersey," he asserted. "Major companies have invaded the association directly by having connected with it as officers and committeemen such people as Judge Amos Beatty, just recently deceased; W. G. Skelly; Frank Phillips, who recently contributed $3,500 to the association; Burdette Blue of Cities Service, and others.

"I predict that if an audit of its sources of income were made at this time this association would be found to be merely an adjunct of the American Petroleum Institute, the propagandizing organization of the oil monopoly."

The Texas Petroleum Council, Representative Coffee continued, is another "example of the sabotage conducted against independent organizations." Other organizations which work for the majors, he said, include the Oklahoma Stripper Well Owners Association and the Mid-Continent Oil & Gas Association.

"In a recent meeting of the United States Chamber of Commerce held in Washington the major oil companies' Frank Phillips, of Phillips Petroleum Company, exposed the hand of majors when he actually advocated before the chamber the exemption of the oil industry from the anti-trust laws of the United States," he said. "He pleaded 'conservation' as the reason for permitting the oil industry to 'regulate' itself by a code of its own design and adoption. This is perhaps the first time that the oil monopoly has exposed its iniqitous and evil designs upon the independent oil men and the American consumers.

"This astounding proposal goes even further and strikes at the very heart and soul of American government. Should we permit the oil monopoly to form a cartel, then every major industry will likewise apply for and obtain the right to loot, pillage and destroy the American people. We have only to look at the operation of the system in Italy and Germany to make us fear that dreaded specter hanging over American liberty.

"The oil monopoly can be regulated only by enacting legislation protecting independents against unfair competition," he concluded. "Divorcement of marketing and pipe lines from major control, as provided by the pending bills, will be a step in the right direction. Independents who are willing to fight for their existence must be protected and encouraged. Congress must take the lead, because that responsibility is upon us."

Oil at the Capitols

Delegation asks Roosevelt to request extension of Interstate Compact . . . Texas Senate kills two measures that would increase taxes on oil.

Extension of compact asked of Roosevelt

Extension of the Interstate Oil Compact, due to expire September 30, was asked of President Roosevelt last week by a delegation from the oil producing states.

Visiting the White House to report to the president upon the achievements of the agreement, the delegation asked him to request Congress to extend it for a period of two years.

Backed by the Connally "hot" oil act, extension of which has been approved by the Senate and is now before the House of Representatives, the compact represents the attack of the major oil states upon the problem of overproduction.

It is expected that a measure providing for continuance of congressional approval of the agreement will be introduced in the near future, and no difficulty is anticipated in securing its passage.

Thompson Present

The plea of the oil states representatives was laid before the President by Col. Ernest O. Thompson of Texas, Former Governor W. J. Holloway of Oklahoma, Lieutenant-Governor Hiram Dow of New Mexico, Senator Elmer Thomas and Representative Lyle H. Boren of Oklahoma, Russell B. Brown, general counsel of the Independent Petroleum Association of America, George A. Hill, Jr., of Texas, and Charles Orr of Oklahoma.

Marketing divorce hearing postponed

A misunderstanding over dates necessitated postponement of last week's hearing on the Harrington bill to divorced marketing.

As the hearing opened June 2 it was discovered there were no witnesses present to testify and inquiry developed that interests opposed to the bill, who were scheduled to be heard, had been informed that they would be given an opportunity to testify June 6.

Hadlick Protests

Protest against further delay in disposing of the legislation was registered by Paul E. Hadlick, counsel for the National Oil Marketers' Association, who charged it was part of the opposition's effort to "side track" the measure.

"I dislike very much to see dilatory tactics used against a bill which has been pending since January," he told Representatives Hobbs (Alabama) and Springer (Indiana), only committeemen present.

Hadlick submitted for the record letters from L. A. Hartley, executive secretary of the Petroleum Retailers' Association, Kansas City, Missouri, and W. H. Reed of W. H. Reed Oil Company, Memphis, Tenn., and a statement from D. Oty Gross, president of the Missouri Independent Oil Jobbers Association, all in favor of the bill.

Senate kills Texas tax measures

The Texas Senate State Affairs Committee has reported unfavorably on two House tax bills designed to raise funds for pension payments. These were the bill increasing the taxes on gross receipts and the omnibus tax bill which provided, among other things, for a graduated tax on the production of crude oil based on the rate of production from individual wells.

This left only the Senate Joint Resolution providing for a constitutional amendment which would raise the fund through a two percent sales tax.

A hearing on the House bills was held by the Senate committee last week, and after proponents were heard briefly, the committee voted on the bills without hearing from any of the opponents. There were only two votes favorable to the gross receipts tax bill and three favored the omnibus tax bill. While it is possible to bring a bill out of this committee on a minority report with only three votes, the small support received in committee indicates that the bill would likely make little progress on the floor under any circumstances.

From these results it appears that, unless the House capitulates and approves the sales tax resolution, the session will end without a tax bill to supply pension funds. Since no constitutional amendment may be proposed except at a regular session of the legislature, the Senate tax plan will be defeated for two years if the legislature adjourns without passing it.

The action of Governor O'Daniel, who condemned as obstructionists those House members who voted against the sales tax, has resulted in

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a very bitter feeling among the legislators, many of whom have indicated their determination to defeat the governor's proposal if it is possible.

Legislature would abolish investigating commission

Pennsylvania's oil industry investigating commission, following a two-year study, submitted a final report to the legislature embodying suggested remedial legislation and asking that a more comprehensive study of the industry be made, and a day following submission of its final report, the legislature authorized abolition of the commission set up by the former Democratic administration. Republican Governor James was expected to sign the repeal measure. No action was taken on the commission's recommendations, which came shortly before adjournment of the legislature last week.

In a preliminary report submitted several weeks ago, the commission declared that federal ownership of the nation's oil reserves was one of the "most meritorious suggestions" submitted during hearings extending over the past two years. This phase of the report, it was announced last week, caused disagreement among members of the commission and was deleted from the final draft.

While "ferocious competition" exists in the retailing of gasoline, testimony given the commission indicates that the posted price for Pennsylvania crude is "usually set by two companies," the final report said. It continued:

"Considering the definition given the term 'monopoly' by some of our courts to the effect that monopoly exists only where there is a complete supply of a commodity, the commission avoids the use of this term," the report added.

The report said that at times two prices have existed for Pennsylvania grade crude, one "the publicized posted price," and the other "the posted price plus a premium which some refiners were obliged to pay in order to obtain their necessary supplies.

"This premium indicated a demand for crude beyond the amount which the seller could furnish at the posted price. In a free market, the posted price would have risen to a point where the demand and supply would have set an equilibrium price, but the practice of the industry was to place purchasers upon an allotment at the posted price. Then those refiners whose supplies were inadequate were obliged to go into the second system and pay a premium."

Texas legislature becomes snarled

The Texas Senate adjourned Friday after bringing up for consideration the resolution providing for corrections to House Bill 9, the measure intended to end the vacancy-hunting racket. Both houses of the legislature are attempting to amend by resolution a bill which both have passed.

Adjournment came before final action on the resolution, and it will be pending business Monday when the Senate convenes.

[*Continued on Page 124*]

Market Situation

Markets improved by further advances in retail and wholesale gasoline price . . . Good demand and reasonable output control are major factors.

Gasoline leads further advance of markets

The markets of the oil industry continue comparatively firm, with wholesale and retail prices of refined products advancing gradually, while crude postings naturally are being bolstered by the improving product prices.

The relatively favorable situation is based on continued good demand for gasoline and other products and the reasonably effective balancing of crude oil production and refinery output with market demand.

Crude Control Effective

Crude production is due to be under satisfactory curtailment in most states and areas under June allowables, although unregulated Illinois continues to over-produce and consequently to suffer from under-the-market selling of some crude.

The past week brought advances of ⅛ cent a gallon in wholesale prices of natural gasoline, following increases in preceding weeks in tank car prices of refined gasoline.

Although the latter prices remained mostly unchanged during the past week, they were strengthened by advances in tank wagon and service station prices of gasoline over extensive areas.

Gasoline Prices Up

Standard Oil Company of Ohio, effective June 1, raised its prices of third grade gasoline throughout Ohio ½ cent a gallon on the tank wagon and 1½ cents at the service station.

Continental Oil Company, effective June 1, advanced its gasoline tank wagon prices at Oklahoma City and in central Oklahoma to 11 cents a gallon for third grade and 12 cents for regular, including taxes of 5 cents.

Tank wagon prices of gasoline had been increased in the latter part of May in the Middle Western states.

Heavy Oil Advanced

Standard Oil Company of New Jersey and affiliated companies, effective June 1, advanced prices for bunker oil 10 cents a barrel at all Atlantic seaboard points and 5 cents a barrel at Gulf ports. New prices at New York are $1.05 a barrel and at New Orleans 85 cents.

The market for kerosene was dull, and prices sagged ⅛ cent a gallon in some instances.

Industry is maintaining high rates of operation

Continued high rates of operation were reflected in the latest weekly statistics of the industry, covering the week ended May 27. Crude oil production jumped to 3,585,250 barrels daily, a new peak for the year, as Saturday production in Texas for the latter half of May showed up in the figures. The new rate was 15.7 percent higher than that in the corresponding week last year.

Crude runs to stills were cut 55,000 barrels from the all-time peak of 3,460,000 barrels daily reached in the previous week, but at the new level of 3,405,000 barrels were 8.4 percent higher than in the corresponding week last year.

The continued heavy runs to stills have been resulting in withdrawals of some crude from storage, despite large production. The crude stocks of the nation came down from 277,739,000 to 277,068,000 barrels in the week ended May 20, latest period for which figures are available.

Gasoline Situation

Gasoline production in the week ended May 27 showed the effect of the record runs to stills in the previous week, having increased to 11,180,000 barrels, an average of 1,597,000 barrels daily, which was 6000 barrels a day more than in the previous week.

Stocks of finished and unfinished gasoline in the United States were reduced about 400,000 barrels, nevertheless, having come down to 84,152,000 barrels. That was 4.3 percent less than the inventory of 87,946,000 barrels held one year previously.

Stocks of gas oil and distillate fuels were increased further about 600,000

High gas/oil ratio sought for Navarro

Humble Oil & Refining Company has requested the Texas Railroad Commission to fix a maximum gas/oil ratio allowance of 15,000/1 for wells producing in the Navarro Crossing field, Houston County. Because the interval between the gas/oil contact and the oil/water contact is only 15 feet and only part of this interval is saturated oil sand, Humble has found difficulty in completing its wells so that gas/oil ratios are not too high or they do not produce too much water.

All but one of the nine oil wells in the field produce some water, and gas/oil ratios have risen, in most cases, since completion. The company has found the best operating practice to be completion of the well about seven feet below the gas/oil contact which is usually found at about —5615 feet. Ratios in the field range from 308/1 to 40,000/1 and the average is 13,000/1.

Humble's geologists estimate that 1200 acres of the field will produce oil and about 3000 acres will produce gas. The Sun Company endorsed the recommendations of Humble and no protests were filed.

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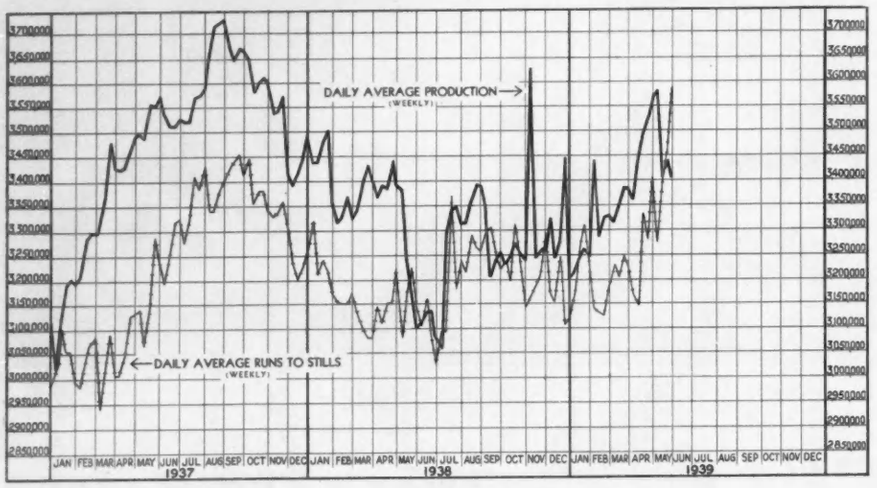
United States Crude Oil Production and Refinery Runs



barrels, as the seasonal build-up continued, the total on hand having stood at 26,992,000 barrels at the end of the week of May 27.

Stocks of residual fuel oils, on the other hand, were drawn upon slightly, having been reduced from 109,405,000 to 109,386,000 barrels.

Imports Larger

Imports of petroleum for domestic use and receipts in bond at principal United States ports, for the week ended May 27, totaled 1,895,000 barrels, a daily average of 270,714 barrels, compared with a daily average of 213,143 barrels for the week ended May 20, and 224,107 barrels daily for the four weeks ended May 27. These figures include all oil imported, whether bonded or for domestic use, but it is impossible to make the separation in weekly statistics. The imports for the week of May 27 included 940,000 barrels of crude oil and 955,000 barrels of fuel oil.

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Fuel Oil Residual
August 28, 1937	**3,731,450	3,425,000	309,506,000	66,997,000	112,111,000	
September 25, 1937	3,666,300	†3,455,000	307,974,000	65,620,000	116,472,000	
March 19, 1938	3,433,550	3,080,000	306,380,000	**93,192,000	122,067,000	
May 28	3,098,650	3,150,000	301,583,000	87,583,000	23,619,000	110,696,000
June 25	3,083,900	3,025,000	293,463,000	82,412,000	25,343,000	112,458,000
July 30	3,316,400	3,240,000	288,514,000	76,864,000	27,573,000	116,721,000
August 27	3,388,500	3,255,000	258,029,000	71,754,000	29,747,000	117,179,000
September 24	3,251,150	3,220,000	280,278,000	68,605,000	31,183,000	119,285,000
October 29	3,237,500	3,145,000	275,824,000	67,590,000	33,690,000	120,029,000
November 12	3,243,250	3,180,000	273,394,000	†67,551,000	34,175,000	120,491,000
November 26	3,260,900	3,295,000	270,563,000	68,628,000	33,749,000	119,885,000
December 10	3,245,100	3,150,000	§269,509,000	68,587,000	32,068,000	118,711,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	29,082,000	115,741,000
January 28, 1939	3,248,250	3,235,000	271,763,000	77,279,000	26,583,000	112,766,000
February 25	3,328,850	3,185,000	271,758,000	84,597,000	23,419,000	110,252,000
March 25	3,382,350	3,225,000	273,915,000	87,561,000	21,487,000	107,551,000
April 22	3,526,700	3,280,000	277,156,000	*87,769,000	21,058,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	†25,844,000	†108,409,000
May 6	3,580,900	3,275,000	*278,607,000	86,216,000	26,167,000	108,597,000
May 13	3,402,500	3,400,000	277,739,000	84,808,000	25,993,000	108,513,000
May 20	3,438,400	**3,460,000	277,068,000	84,294,000	26,389,000	109,405,000
May 27, 1939	*3,585,250	3,405,000	.....	84,152,000	26,992,000	109,386,000
May 28, 1938	3,098,650	3,150,000	‡302,597,000	87,946,000	†23,619,000	†110,696,000
Change from year ago	+15.7%	+8.4%	—8.4%	—4.3%	+14.2%	—1.1%

** All time peak. * Peak for 1939. § Lowest for 17 years. ‡ Stocks, May 21, 1938.
† Prior to week ended April 29, 1939, figures did not include stocks at terminals, in transit, etc., except in California. Such stocks, outside California, included for first time in week of April 29, 1939, consisted of 4,772,000 barrels of gas oil and distillates and 2,769,000 barrels of residual fuel oil.
° Peak prior to 1939. †† Lowest for year.

I.P.A.A. to report on economic situation

Factors which make up the current economic position of the oil industry will be studied and embodied in a report by the committee on balance of supply and demand of the Independent Petroleum Association of America when it meets in Dallas, June 5.

This standing committee of the association regularly makes a report with recommendations on the production and stocks withdrawals program which the industry should follow to achieve a balanced situation. The committee is headed by H. B. Fell, executive vice president of the association, and the other members are J. S. Bridwell, vice chairman, C. M. Boggs, J. A. Aylward, and Van S. Welch.

Preliminary studies are now being made preparatory to making the report and the final meeting to draft the analysis and report will begin at 8:30 a.m., June 5.

On the same day, starting at 10 o'clock a.m., the special study committee of the Independent Petroleum Association of America will meet to prepare its final report for the membership meeting that begins at 10 o'clock June 6. The special study committee, originally consisting of 36 and now, because of the death of Judge Amos L. Beaty, having 35 members, met several times in late 1938 to consider several broad questions submitted by the annual meeting of the association in October. Among these were the subject of pipeline divorcement, on which congressional action is pending, and which will be one of the principal questions to be considered by the membership meeting of the Independent Petroleum Association of America on June 6.

Other meetings to be held by groups of the association in Dallas are those of the credentials and rules and order of business committee, a special committee, at 4 o'clock p.m., June 5, and the association's executive committee at the conclusion of the membership meeting on June 6.

Kansas members of the association plan to hold a meeting in Wichita this week to discuss the questions which will be considered in Dallas.

Price changes mostly on upward side

Although crude oil prices remained generally unchanged during the past week, there were some further advances of gasoline prices, both wholesale and retail. Natural as well as refined gasoline improved. Heavy fuel oil prices also were advanced in some instances. On the other hand, there was some easing of kerosene prices at the refineries.

Gasoline Prices

U. S. motor gasoline ranged in the Oklahoma market last week about as follows: 62 octane and below, 4⅛ to 4⅜ cents a gallon; 63 to 66 octane, 4⅜ to 4⅝ cents; 67 to 69 octane, 4⅝ to 4⅞ cents; 70 to 72 octane, 4⅞ to 5⅛ cents.

Corresponding prices in the Chicago market were: 4 to 4⅜ cents, 4⅛ to 4½ cents, 4¼ to 4¾ cents, and 4½ to 5⅛ cents.

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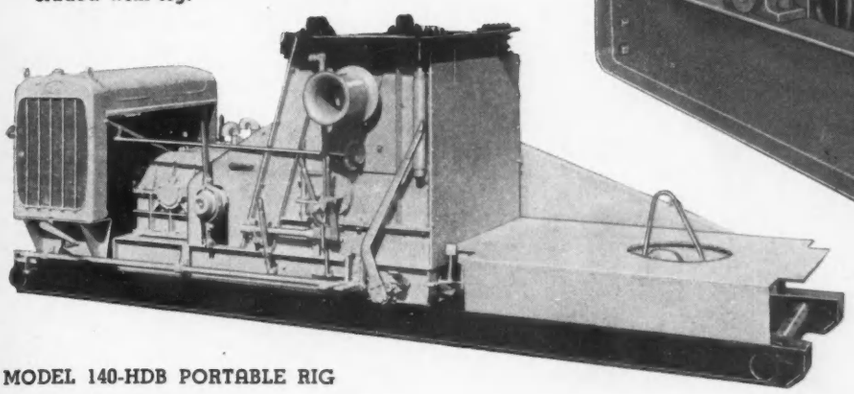

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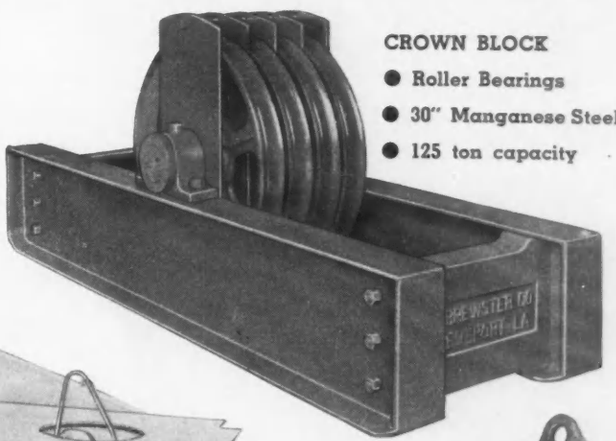

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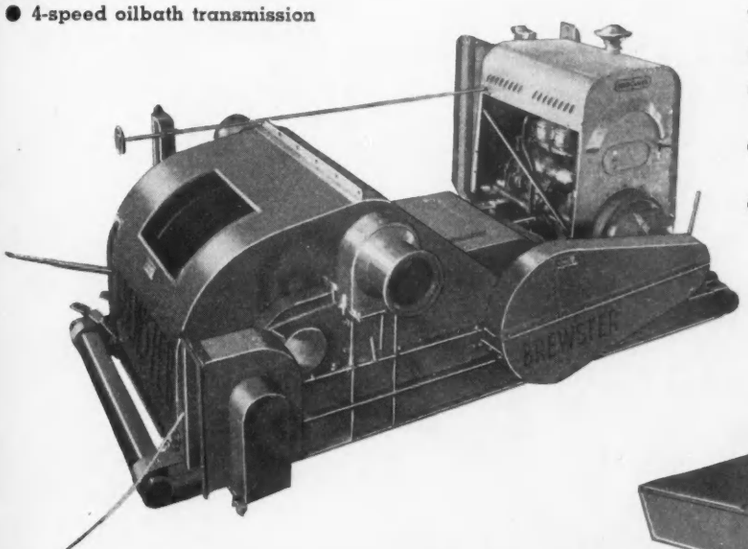

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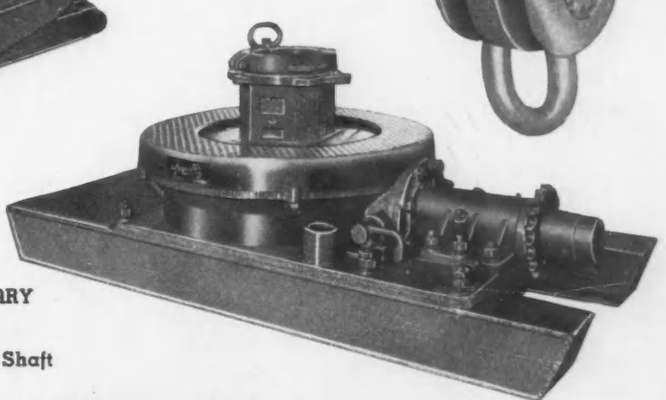

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gasoline was priced generally at 4¼ cents a gallon.

Natural gasoline, grade 26-70, was selling in the Mid-Continent markets, f.o.b. refineries, at 2⅝ cents a gallon, and sales were reported at the same price f.o.b. Breckenridge, Texas.

Kerosene prices f.o.b. Oklahoma refineries ranged from 3¾ to 4¼ cents a gallon for the 41-43 water white grade, and from 4 to 4⅝ cents for the 42-44 water white grade; and corresponding prices in the Chicago market were 3½ to 4⅛ cents and 3⅝ to 4⅜ cents.

Fuel Oil Prices

Prices of fuel oils were generally unchanged last week. In the Chicago market range oil was priced from 3¼ to 4 cents a gallon. The No. 1 white oil was priced from 3¼ to 3⅞ cents, and No. 1 straw from 3¼ to 3½ cents. No. 2 straw was 3⅛ to 3½ cents. No. 3 oil was 2⅞ to 3⅛ cents. No. 5 oils were 57½ to 70 cents a barrel. The No. 6 oil was quoted at 35 to 45 cents.

Reduce crude purchases in North Louisiana fields

DeSoto Crude Oil Purchasing Company has reduced its purchases to 50 percent of the allowable at Lisbon, and also reduced its purchases equally at Vivian-Pine Island, Caddo Parish. DeSoto's producing affiliate, Hurricane Petroleum Company, has completed several wells recently in the Shreveport field.

LETTERS

Dear Sirs:

I note you admit in your answer to my "Page the Economist" letter published on page 59 of the May 29 issue of THE OIL WEEKLY that "an economist might go exhaustively into the present relationship of supply and demand, and prices of oil without finding a satisfactory explanation of the current situation in which prices are lower than a year ago in the face of smaller inventories." That settles that point.

You add, however, the following:

"But a crude oil broker would not be stumped."

You sure said a mouthful when you said that.

The broker or pipe line purchasing companies have always found some way of "pointing out" some excuse in lieu of facts to enable them to buy crude oil cheap.

It has been a case of either "supply and demand not balancing," or if it looked like supply and demand might balance they would import enough to throw supply and demand out of balance, or import cheap crude which was not for sale but used themselves, and then set a price on something they did not want to sell for the purpose of bearing down the price of the domestic product, or if that has been overworked, then find an excuse to buy cheap crude with a propaganda of sulphur content, and after wearing that out for a while they used "potential overproduction" as an excuse to buy crude cheap, and of late the new stunt has been "not enough octane content" along with too much gasoline inventories.

Now it is because "substantial quantities of crude are being sold for less than the established market prices in Illinois and some other areas and low priced crude is converted into low priced gasoline."

Who set the price on the Illinois crude? I might add that there has been a kick on the low price on Louisiana crude going into Texas, and I again ask who set the price on all this low priced crude?

It has been the pipe line purchasing companies and this "broker" you speak of.

The producers of Louisiana and Illinois, and the royalty owners, sure would like to get more for their crude if they could, but they are at the mercy of the price setters or the "broker" as you call him.

You say "the crude oil broker," realizing that the Illinois production may go to 275,000 barrels daily by the end of the summer, in the almost certain absence of state proration, might add that even present prices of oil are not safe.

It is to be expected that the "broker"

CALIFORNIA CRUDE OIL PRICES

(Posted February 26, 1936; except El Segundo and Wilmington, posted October 15, 1937, and Greeley and Canal posted July, 1938). All gravity above those quoted take highest prices of that field.

Gravity	El Segundo and Signal Hill	Seal Beach Alamitos Heights	Huntington Beach	Inglewood	Playa Del Rey	Olinda Brea Canyon	Athens Rosecrans	Torrance	Richfield	Whittier East Coyote La Habra	Montebello	West Coyote Hills	Santa Fe Springs	New Hall McKittrick Kern River Round Mountain	Greeley, Canal	Mountain View	Midway-Sunset Buena Vista Hills Elk Hills	Lost Hills	Coalinga	Wheeler Ridge	Wilmington
14-14.9	$0.80	$0.79	$0.78	$0.79	$0.80	$0.76	.....	$0.80	$0.76	$0.76	$0.77	$0.78	.....	$0.70	....	....	$0.70	$0.70	$0.70	.....	$0.75
15-15.9	.80	.79	.78	.79	.80	.76	.....	.80	.76	.76	.77	.78	.....	.70	....	....	.70	.70	.70	.....	.75
16-16.9	.80	.79	.78	.79	.80	.76	.....	.80	.76	.76	.77	.78	.....	.70	....	....	.70	.70	.70	.....	.75
17-17.9	.80	.79	.78	.81	.80	.76	.....	.80	.76	.76	.77	.78	.....	.70	....	....	.70	.70	.70	.....	.77
18-18.9	.80	.79	.78	.84	.80	.78	.....	.82	.76	.76	.77	.78	.....	.70	....	....	.70	.70	.70	.....	.79
19-19.9	.82	.79	.82	.87	.84	.81	.....	.85	.76	.78	.77	.78	.....	.70	....	$0.70	.74	.74	.71	$0.70	.82
20-20.9	.85	.79	.85	.90	.88	.84	.....	.88	.78	.82	.77	.80	.....	....	....	.70	.78	.78	.72	.70	.85
21-21.9	.88	.79	.89	.93	.93	.88	.....	.91	.80	.85	.77	.84	$0.78	....	....	.73	.82	.82	.74	.70	.88
22-22.9	.92	.82	.92	.96	.98	.92	.....	.93	.84	.89	.79	.88	.78	....	....	.77	.87	.86	.78	.72	.92
23-23.9	.95	.86	.96	.99	1.02	.96	$0.84	.96	.88	.93	.82	.92	.78	....	....	.80	.92	.90	.82	.76	.95
24-24.9	.99	.91	1.00	1.02	1.06	.99	.88	.99	.91	.96	.85	.96	.82	....	....	.84	.97	.94	.86	.79	.99
25-25.9	1.03	.95	1.03	1.05	1.11	1.03	.93	1.02	.95	....	.89	.99	.86	....	....	.88	1.01	.98	.90	.83	1.03
26-26.9	1.06	1.00	1.07	1.09	1.16	1.06	.98	1.05	.98	....	.92	1.03	.90	Elwood	....	.91	1.06	1.02	....	....	1.06
27-27.9	1.10	1.05	1.11	1.12	.....	1.10	1.03	....	1.02	....	.96	1.06	.95	Terrace	$0.91	.95	1.10	1.06	....	....	1.10
28-28.9	1.14	1.10	1.14	1.15	.....	1.14	1.07	....	1.06	....	.99	1.10	.99	.94	.94	.99	1.15	1.10	....	....	1.14
29-29.9	1.17	1.15	1.18	1.18	F.O.B.	1.17	1.12	....	1.09	....	1.03	1.14	1.03	....	.98	1.02	1.20	1.14	....	....	1.17
30-30.9	1.21	1.19	1.22	1.21	Pipe	1.21	1.17	....	....	....	1.07	1.17	1.08	F.O.B.	1.02	1.06	1.25	1.18	....	....	1.21
31-31.9	.....	.....	.....	1.24	Line	1.24	1.22	Kettleman Hills			1.11	1.21	1.12	Ship	1.06	1.09	1.29	....	....	....	....
32-32.9	.....	.....	.....	1.27	....	1.27	1.27				1.14	1.25	1.16	....	1.09	1.13	1.34	....	....	....	....
33-33.9	.....	.....	.....	.....	.....	.....	1.32	1.19			1.18	1.28	1.20	1.28	1.13	1.17	1.38	....	....	....	....
34-34.9	.....	.....	.....	.....	.....	.....	1.37	....	1.23	....	1.22	1.32	1.25	1.32	1.17	1.20	.....	.....	.....	.....	.....
35-35.9	.....	.....	.....	.....	.....	.....	1.42	....	1.27	....	1.25	.....	1.29	1.35	1.20	.....	.....	.....	.....	.....	.....
36-36.9	.....	.....	.....	.....	.....	.....	1.46	....	1.31	....	1.29	.....	1.33	1.39	1.24	.....	.....	.....	.....	.....	.....
37-37.9	.....	.....	.....	.....	.....	.....	1.51	....	1.35	....	1.32	.....	1.37	1.43	1.28	.....	.....	.....	.....	.....	.....
38-38.9	.....	.....	.....	.....	.....	.....	1.56	....	1.39	....	1.36	.....	1.42	....	1.31	.....	.....	.....	.....	.....	.....
39-39.9	.....	.....	.....	.....	.....	.....	1.61	....	1.43	.....	1.40	.....	.....	.....	1.35	.....	.....	.....	.....	.....	.....
40-40.9	.....	.....	.....	.....	.....	.....	1.66	.....	.....	.....	1.43	.....	.....	.....	1.39	.....	.....	.....	.....	.....	.....
41-41.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.43	.....	.....	.....	.....	.....	.....
42-42.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.46	.....	.....	.....	.....	.....	.....
43-43.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.50	.....	.....	.....	.....	.....	.....
44-44.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.54	.....	.....	.....	.....	.....	.....
45-45.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.57	.....	.....	.....	.....	.....	.....
46-46.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.61	.....	.....	.....	.....	.....	.....
47-47.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.65	.....	.....	.....	.....	.....	.....
48-48.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.68	.....	.....	.....	.....	.....	.....

Seismic's reputation in the geophysical field is maintained by reliable reflection surveys and accurate interpretations.
SEISMIC EXPLORATIONS, Incorporated
Houston, Texas

CRUDE OIL PRICE SCHEDULES

MID-CONTINENT GRAVITY SCALE PRICES

(Posted October 11-13, 1938)

(Some fields of Mid-Continent have flat price postings, and are shown separately).

GRAVITY	[7]Okla.-Kans.	North La.-Ark.	North & W. Central Tex.	East Central Tex.	Gray Co. Tex.	Carson, Hutchinson Co. Tex.	[1]Tomball Tex. Type	West Tex.-N. Mex.	[2]Gulf Coast (Tex.-La.)	[3]Some La. Gulf Areas	Jennings, La.	[4]Anahuac, Tex. Type	[5]Refugio, Tex. Type	[6]Mirando, Tex. Type	[8]Salt Creek, Wyo.
17–17.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
18–18.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
19–19.9	.....	.....	.....	.....	.....	.....	.....	*$0.53	*$0.79	*$0.79	.....	*$0.74	*$0.79	*$0.74	.....
20–20.9	$0.60	.....	.....	.....	.....	.....	.....	.55	.82	.82	.....	.77	.82	.77	.....
21–21.9	.63	.....	.....	.....	.....	.....	.....	.57	.85	.85	.....	.80	.85	.80	.....
22–22.9	.66	.....	.....	.....	.....	.....	*$0.95	.59	.88	.88	.....	.83	.88	.83	.....
23–23.9	.69	.....	.....	*$0.78	.....	.....	.97	.61	.91	.91	.....	.86	.91	.86	.....
24–24.9	.72	*$0.73	*$0.71	.80	.....	.....	.99	.63	.94	.94	.....	.89	.94	.89	.....
25–25.9	.75	.75	.73	.82	.....	.....	1.01	.65	.97	.97	.....	.92	.97	.92	.....
26–26.9	.78	.77	.75	.84	.....	.....	1.03	.67	1.00	1.00	.....	.95	1.00	.95	.....
27–27.9	.81	.79	.77	.86	.....	.....	1.05	.69	1.02	1.02	.....	.97	1.02	.97	.....
28–28.9	.84	.81	.79	.88	*$0.72	*$0.67	1.07	.71	1.04	1.04	.....	.99	1.04	.99	*$0.86
29–29.9	.87	.83	.81	.90	.74	.69	1.09	.73	1.06	1.06	.....	1.01	1.06	1.01	.88
30–30.9	.90	.85	.83	.92	.76	.71	1.11	.75	1.08	1.08	.....	1.03	1.08	1.03	.90
31–31.9	.92	.87	.85	.94	.78	.73	1.13	.77	1.10	1.10	*$0.87	1.05	1.10	1.05	.92
32–32.9	.94	.89	.87	.96	.80	.75	1.15	.79	1.12	1.12	.89	1.07	1.12	1.07	.94
33–33.9	.96	.91	.89	.98	.82	.77	1.17	.81	1.14	1.14	.91	1.09	1.14	1.09	.96
34–34.9	.98	.93	.91	1.00	.84	.79	1.19	.83	1.16	†1.16	.93	1.11	1.16	1.11	.98
35–35.9	1.00	.95	.93	1.02	.86	.81	1.21	.85	1.18	.....	.95	1.13	1.18	1.13	1.00
36–36.9	1.02	.97	.95	1.04	.88	.83	1.23	.87	1.20	.....	.97	1.15	1.20	1.15	1.02
37–37.9	1.04	.99	.97	1.06	.90	.85	1.25	.89	1.22	.....	.99	1.17	1.22	1.17	1.04
38–38.9	1.06	1.01	.99	1.08	.92	.87	1.27	.91	1.24	.....	1.01	1.19	1.24	1.19	1.06
39–39.9	1.08	1.03	1.01	1.10	.94	.89	1.29	.93	1.26	.....	1.03	1.21	1.26	1.21	1.08
40 and above	1.10	1.05	1.03	1.12	.96	.91	1.31	.95	1.28	.....	1.05	1.23	1.28	1.23	1.10

* Minimum price and applies also to purchases of lower gravity.

† Maximum price and applies also to purchases of higher gravity.

[1] Tomball, Raccoon Bend (Deep Sand) and Satsuma.

[2] Includes Cotton Lake, Goose Creek, Sugarland, West Columbia, Thompsons, Mykawa, Nome, Amelia, Webster, and Clear Lake fields.

[3] Includes Berwick Bay, Bay St. Elaine, Caillou Island, Chacahoula, Dog Lake, Four Isle, Gillis, Hackberry, Horseshoe Bayou, Iberia, Jefferson Island, Lake Barre, Lake Pelto, Leesville, Port Barre, and Vinton fields.

[4] Anahuac, Dickinson, Gillock, Cedar Point, Fairbanks, Turtle Bay, Hull, Liberty, Orange, Pierce Junction, Barbers Hill and Raccoon Bend (shallow sand) fields.

[5] Includes Saxet, Greta, O'Connor-McFadden, Taft, Plymouth and Tom O'Connor fields.

[6] Includes Duval, Jim Hogg, Jim Wells, Webb and Zapata counties, Texas, and Heyser and Placedo fields.

[7] Oklahoma Pipe Line (Carter Oil) and Magnolia schedules.

[8] Includes La Barge, Midway Dome, Dutton Creek.

Mid-Continent Flat Prices

	Flat Price	Date Posted
Arkansas:		
Smackover	$0.73	10–12–38
Louisiana:		
Garden Island	1.24	10–12–38
Gibson	1.04	10–11–38
Lafitte	1.04	10–12–38
Texas:		
East Texas	1.10	10–12–38
Talco	.55	10–12–38
Livingston, Cleveland	1.10	10–12–38
Van	.93	10–12–38
Pettus	1.29	10–12–38
Pecos County	.78	10–12–38
Pecos Shallow	.65	10–12–38
Luling	.87	10–12–38
Lytton Springs	.99	10–12–38
Salt Flat, Darst Creek, Hilbig, Carroll, Clark and Zoboroski	.96	10–11–38
Flour Bluff	1.27	10–11–38
Guerra	1.06½	5– 8–39
Seabreeze, Willow Slough, La Belle, Hardin	1.00	10–13–38
Clay Creek	.85	10–13–38
Conroe	1.27	10–11–38
Cayuga	.81	10–19–38
Long Lake	1.08	10–19–38

Middle West Prices

Lima, Ohio	$0.90	10–13–38
Illinois	1.05	10–13–38
Illinois Basin	1.15	10–13–38
Centralia, Illinois	1.15	10–13–38
Princeton, Indiana	1.05	10–13–38
Western Kentucky	1.10	10–13–38
Kentucky River, Eastern Kentucky	1.20	10– –38
Big Sandy River, Eastern Kentucky	1.12	10– –38

Michigan Prices

	Flat Price	Date Posted
Porter, Greendale, Crystal	$0.97½	4–20–39
Buckeye, Bentley, Edenville and Beaverton	.95	4–20–39
Freeman	.89	4–20–39
Bloomingdale	.78	12–19–38
West Branch-Arenac-Ogemaw	.70	12–19–38
Allegan-Kent Co.	.88	4–17–39

Rocky Mountain States Prices

Colorado:		
Canon City, Ft. Collins, Wellington, Moffat and Florence	.90	10–11–38
Iles, Light	.98	10–11–38
Iles, Heavy	.92	10–11–38
Montana:		
Cat Creek—Cut Bank	1.10	10–11–38
Sunburst	.90	11–16–37
Dry Creek	.92	10–11–38
New Mexico:		
Artesia	.77	10–11–38
Hogback	1.00	10–11–38
Wyoming:		
Big Muddy	.98	10–11–38
Byron	.55	10–11–38
Elk Basin	.90	10–11–38
Frannie, Light	.55	10–11–38
Frannie, Heavy	.42	10–11–38
Garland	.50	10–11–38
Grass Creek, Light	.90	10–11–38
Grass Creek, Heavy	.40	10–11–38
Hamilton Dome	.35	10–11–38
Lance Creek	.77	10–11–38
Mill Creek	.72	10–11–38
Oregon Basin	.50	10–11–38
Osage	1.30	10–11–38
Poison Spider	.59	10–11–38
Rock Creek	1.00	10–11–38
Tensleep	.646	10–11–38

Pennsylvania Prices

	Flat Price	Date Posted
Bradford-Allegheny	$2.00	3– 6–39
National Transit Lines	2.00	3– 6–39
Sw. Pa. Pipe Line	1.65	3– 6–39
Eureka Pipe Line	1.59	3– 6–39
Buckeye Pipe Line	1.55	3– 6–39
Corning Grade, Ohio	1.02	1–24–39

Major Price Changes

	Penna. (Nat. Tr.)	Mid-Cont. (36 Gr.)	Calif. (26 Gr.)
June 19, 1933	Up 10	Up 19	.....
June 26, 1933	Up 10	.....	Up 9-12
July 6, 1933	Up 13	Up 10	.....
July 17, 1933	Up 15	.....	.....
July 28, 1933	Up 15	.....	.....
Aug. 11, 1933	Up 10	.....	.....
Aug. 24, 1933	.....	Up 10	.....
Aug. 30, 1933	Up 15	.....	.....
Sept. 6, 1933	Up 10	Up 10	Up 15
Sept. 8, 1933	.....	Up 15	.....
May 1, 1934	Up 10	.....	.....
Nov. 6, 1934	Cut 25	.....	.....
Dec. 6, 1934	Cut 25	.....	.....
Jan. 4, 1935	Up 15	.....	.....
Feb. 4, 1935	Up 15	.....	.....
May 16, 1935	Cut 15	.....	.....
June 26, 1935	Cut 15	.....	.....
July 16, 1935	Cut 10	.....	.....
Aug. 29, 1935	.....	.....	Cut *1
Sept. 6, 1935	Up 5	.....	.....
Oct. 29, 1935	Up 15	.....	.....
Nov. 1, 1935	.....	.....	Up *28
Nov. 18, 1935	Up 15	.....	.....
Dec. 6, 1935	.....	.....	Up *9
Jan. 9, 1936	.....	Up 10	.....
Jan. 13, 1936	Up 15	.....	.....
Feb. 26, 1936	.....	.....	Up †5
Dec. 28, 1936	Up 12	.....	.....
Jan. 28, 1937	.....	Up 12	.....
Feb. 24, 1937	Up 10	.....	.....
June 7, 1937	Up 15	.....	.....
Sept. 1, 1937	Cut 22	.....	.....
Oct. 12, 1937	Cut 25	.....	.....
Dec. 1, 1937	Cut 15	.....	.....
March 7, 1938	Cut 17	.....	.....
June 13, 1938	Cut 25	.....	.....
Sept. 1, 1938	Cut 12	.....	.....
Oct. 11, 1938	.....	Cut 20	.....
Jan. 21, 1939	Up 12	.....	.....
Feb. 2, 1939	Up 8	.....	.....
March 6, 1939	Up 12	.....	.....

* Signal Hill 26 gravity.

† Seal Beach 26 gravity.

Crude Production Taxes

Oklahoma—Five percent of gross value less royalty interests.
Texas—2¾ cents or 2¾ percent, whichever is higher.
Louisiana—From four to 11 cents a barrel, depending upon gravity.
Arkansas—2.6 percent of gross market value.
Montana—Two percent of gross value at well and ⅝ of 1c per barrel.
New Mexico—Severance tax of 2 percent on oil and gas.
Wyoming and New Mexico—Production tax based upon state and county assessments.
California—.66443 mills per barrel of oil produced and 17.39 cents an acre on proved lands.

could not do anything but hang crepe when trying to buy crude oil. He could not even think that East Texas or some other large field could possibly go to salt water, and even with Louisiana having admittedly the best conservation laws of any of the oil producing states and with our conservation officials holding production below the Bureau of Mines' estimate for Louisiana, yet the "broker" offers less for Louisiana crude and we are forced to take it because the "broker" finds our oil hasn't got enough anti-knock content.

It isn't sulphur content this time but it is anti-knock-knock content, and this anti-knock-knock according to the "broker's" propaganda is demoralizing Texas markets, but still the "broker" wants to buy Louisiana crude and we have to sell our prorated production and royalty at "brokers" prices.

You know and we all know that the pipe line purchasing companies and the refineries could absolutely regulate the production of the United States and the imports and the refinery runs and keep supply and demand balancing if they saw fit to do so, and they could establish a stabilized price for crude petroleum of different gravities based upon its true value, and this proposition of supply and demand governing the price of crude petroleum would be a big joke if it were not so serious. "There ain't no such animal" in the oil business as supply and demand.

W. Scott Heywood,
Oil Operator

Jennings, Louisiana

Crude Production

Nation's output 7375 barrels daily below peak, but still 176,950 barrels over recommendation.

UNITED STATES production of crude oil during the week ended June 3 averaged 3,602,150 barrels daily. Production at this rate was 7375 barrels daily lower than that of the previous week, which set a record for 1939. Last week's production level may not be reached again during the year if Texas prolongs observance of the Saturday shutdown order made for June. Bureau of Mines estimate of demand for domestic crude was over-produced by 176,950 barrels daily.

Texas, enjoying its last open Saturday for at least another month, produced 1,479,000 barrels daily, turning 17,250 barrels downward from the previous week's high for the year. Output at this pace was 72,900 barrels over that prescribed by the bureau; another situation which should not occur for several weeks.

California yield was checked at 608,200 barrels daily, off 1800 from the level attained the week before and 32,700 and 25,600 barrels daily in excess of state and federal recommendation, respectively.

Louisiana lifted 268,900 barrels daily to exceed the previous week's output by 800 barrels. The slight increase put yield 5266 barrels over conservation department figures and 7300 barrels over the bureau recommendation.

Oklahoma output was 445,175 barrels daily, off 4550 barrels from the week before, and 17,175 barrels over state allocation. Bureau forecast was 10,725 barrels over production.

Illinois production spurted to 218,200 barrels daily, gaining 2650 barrels on the preceding week and 58,500 barrels over government recommendation.

Kansas production rose to 174,275 barrels daily, picking up 12,525 barrels from the prior period, and exceeding state allocation by 3925 barrels and federal forecast by 21,675 barrels as it registered the only major gain of the week.

Apco gets 40-acre unit spacing

Wells in the new Apco field, Pecos County, will be spaced in the center of 40-acre units, according to provisions of an order issued by the Texas Railroad Commission last week. This will allow wells to be located 660 feet from lease lines and 1320 feet apart.

United States Crude Oil Production

Estimates Compiled by THE OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (May)	State Allowable in May	BARRELS DAILY FOR WEEK ENDED June 3	BARRELS DAILY FOR WEEK ENDED May 27
TEXAS—				
Texas Panhandle			81,250	87,550
North Texas			87,250	84,850
West Central Texas			31,650	31,300
West Texas			235,950	235,650
East Central Texas			98,050	106,200
East Texas Field			446,450	446,950
South Texas			260,100	256,200
Texas Gulf Coast			238,300	247,550
Total Texas	1,406,100	1,393,077*	1,479,000	1,496,250
CALIFORNIA—				
Long Beach			48,000	48,700
Santa Fe Springs			27,500	27,500
Huntington Beach			27,200	27,800
Dominguez			20,700	22,000
Ventura Avenue			40,500	34,300
Midway-Sunset			45,400	54,300
Kettleman Hills			55,700	52,400
Wilmington			89,500	90,100
Others			253,700	252,900
Total California	582,600	575,590†	608,200	610,000
OKLAHOMA—				
Oklahoma City			100,575	99,650
Seminole Area			110,025	104,425
Fitts			26,725	26,700
Others			207,850	218,950
Total Oklahoma	455,800	428,000	445,175	449,725
LOUISIANA—				
North Louisiana		62,629	73,600	72,850
South Louisiana		201,005	195,300	195,250
Total Louisiana	261,600	263,634	268,900	268,100

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (May)	State Allowable in May	BARRELS DAILY FOR WEEK ENDED June 3	BARRELS DAILY FOR WEEK ENDED May 27
ILLINOIS—				
Salem			116,625	113,500
Loudon			45,925	46,000
Other New Pools			47,900	47,300
Old Pools			7,750	8,750
Total Illinois	159,700		218,200	215,550
KANSAS—				
Burrton-Haven			10,075	10,100
Russell County			22,775	22,050
Silica			11,525	11,200
Others			129,900	118,400
Total Kansas	152,600	170,350	174,275	161,750
NEW MEXICO	115,500	117,100	110,950	111,050
EASTERN STATES—				
Pennsylvania Grade			75,950	76,800
Others, Eastern			6,050	5,550
Total Eastern States			82,000	82,350
MOUNTAIN STATES—				
Wyoming			60,700	60,500
Montana			14,700	14,650
Colorado			3,850	3,600
Total Mountain States	85,500		79,250	78,800
MICHIGAN	50,000		63,900	63,950
ARKANSAS	52,900	54,672	56,375	55,100
KENTUCKY	15,800		14,225	14,500
INDIANA	2,900		2,400	2,400
Total United States	3,425,200		3,602,150	3,609,525

* Daily average, considering Saturday and Sunday shut-downs, water exemptions, and exemption at Rodessa.
† Recommendation of Central Committee of California Oil Producers.

Bureau shows growth in U. S. March output

Washington, D. C.—Hitting the fastest pace attained since November, 1937, the domestic petroleum industry in March produced an average of 3,444,100 barrels of oil daily, it was reported May 9 by the Bureau of Mines.

Increasing for the fifth consecutive month, average output in March was 105,700 barrels above that for February and 7800 barrels above the average for March, 1938, the bureau reported.

Total production for the month was 106,768,000 barrels, compared with 93,475,000 barrels in February and 106,524,000 barrels in March, 1938, and the increase of more than 13,000,000 barrels over February did much to close the gap between 1939 and 1938 output for the first quarter—302,733,000 barrels this year against 307,193,000 barrels a year ago, it was shown.

Despite the continuance of both Saturday and Sunday shutdowns in Texas in March, the bureau pointed out, the daily average output rose more than 50,000 barrels to 1,352,800 barrels. Production in Kansas increased substantially; Oklahoma maintained the increase recorded in February, and California's average remained unchanged, while Illinois established another new record, its daily average rising to 173,500 barrels, or 11,300 barrels higher than in February.

With production increasing more than crude runs, the report showed, additions to crude stocks were accentuated in March. Other supply and demand factors remained virtually unchanged. Stocks of refinable crude at the end of the month were reported as 276,355,000 barrels, exclusive of 15,814,000 barrels of heavy crude in California.

The yield of both gasoline and distillate fuels declined during the month, with about half the net decline going into residuals, the remainder into other products, particularly asphalt, the bureau found.

"Although the indicated domestic demand for motor fuel did not bear out the promise of January and February," the report commented, "the total of 42,520,000 barrels was three percent above the March, 1938, figure, which was somewhat inflated by impending increases in freight rates. Exports of motor fuel recovered from the February slump, totaling 4,336,000 barrels. Stocks of finished and unfinished gasoline increased 1,630,000 barrels during March, reaching 87,121,000 (81,189,000 finished) barrels on March 31 as the probable peak for the year. Considered in the light of excessive stocks, this performance was somewhat better than normal, but nearly as good as in March, 1938.

"As expected, the demand for light fuels declined from seasonal causes in March but heavy fuels continued to show strength and the daily average total demand for residual fuel oil in March was substantially higher than in February. The domestic demand for petroleum coke for 1939 is showing a surprisingly high increase over 1938."

Statistics of the Bureau of Labor Statistics placed the price index for petroleum products in March at 50.9, compared with 50.7 in February and 57.9 in March, 1938. The crude-oil capacity represented in the report was 4,119,000 barrels, giving an operating ratio of 77 percent, compared with 76 percent in February and 77 percent in March of last year.

Details of supply and demand for February, compared with preceding months, in thousands of barrels, are shown in the accompanying table:

SUPPLY AND DEMAND OF ALL OILS
(Thousands of barrels)

	March, 1939	February, 1939	March, 1938	January-March 1939	January-March 1938
New Supply:					
Domestic production:					
Crude petroleum	106,768	93,475	106,524	302,733	307,193
Daily average	3,444	3,338	3,436	3,364	3,413
Natural gasoline	4,232	3,747	4,326	12,243	12,551
Benzol[1]	192	170	143	547	422
Total production	111,192	97,392	110,993	315,523	320,166
Daily average	3,587	3,478	3,580	3,506	3,557
Imports[2]:					
Crude petroleum:					
Receipts in bond	226	332	373	1,053	613
Receipts for domestic use	1,404	1,266	2,196	4,043	5,934
Refined products:					
Receipts in bond	1,570	1,167	1,687	3,785	4,300
Receipts for domestic use	659	654	638	1,922	1,826
Total new supply, all oils	115,051	100,811	115,887	326,326	332,839
Daily average	3,711	3,600	3,738	3,626	3,698
Decrease in stocks, all oils	119	2	[3]5,650	348	[3]24,243
Demand:					
Total demand	115,170	100,813	110,237	326,674	308,596
Daily average	3,715	3,600	3,556	3,630	3,429
Exports[2]:					
Crude petroleum	4,966	4,810	6,121	14,253	17,402
Refined products	10,849	7,335	9,204	26,678	25,797
Domestic demand:					
Motor fuel	42,520	34,595	41,259	114,882	108,296
Kerosene	5,201	5,901	5,150	17,082	15,527
Gas oil and distillate fuels	12,304	[4]13,712	10,487	41,743	34,780
Residual fuel oils	28,071	[4]25,117	25,696	81,569	75,167
Lubricants	1,987	1,653	2,195	5,249	4,977
Wax	73	97	90	244	287
Coke	646	605	308	1,781	1,259
Asphalt	1,269	833	1,444	3,163	3,404
Road Oil	228	180	131	581	450
Still gas	5,376	4,629	4,901	15,086	14,266
Miscellaneous	187	153	137	513	406
Losses	1,493	1,193	3,114	3,850	6,578
Total domestic demand	99,355	88,668	94,912	285,743	265,397
Daily average	3,205	3,167	3,062	3,175	2,949
Stocks:					
Crude petroleum:					
Refinable in U. S.	276,355	273,416	309,403	276,355	309,403
Heavy in Calif.	15,814	16,360	16,069	15,814	16,069
Natural gasoline	4,721	4,708	5,531	4,721	5,531
Refined products	257,232	259,757	257,226	257,232	257,226
Total, all oils	554,122	554,241	588,229	554,122	588,229
Days' supply	149	154	165	153	172

[1] From Coal Economics Division. [2] Imports of crude as reported to Bureau of Mines; all other imports and exports from Bureau of Foreign and Domestic Commerce. [3] Increase. [4] Revised.

Natural gasoline production in March exceeds February

Daily average production of natural gasoline in March increased to 5,734,000 gallons, compared with 5,621,000 gallons in February, it was reported May 10 by the Bureau of Mines.

Total production for the month was 177,744,000 gallons against 157,374,000 gallons in February, and for the first quarter output was 514,206,000 gallons against 527,142,000 gallons in the same period last year, it was announced.

The chief gains in March occurred in the East Texas, Rocky Mountain and Seminole districts, the bureau found.

A decline in stocks of natural gasoline at refineries from 104,370,000 gallons February 28 to 101,220,000 gallons March 31 was more than offset by an increase in stocks at plants and terminals from 93,366,000 to 97,062,000 gallons, it was stated.

Capitols

[*Continued from page 116*]

Meanwhile, the House had killed Senate Bill 32, the measure intended to permit proration of sweet gas in the Texas Panhandle. Owners of small tracts contended they had too small a share in the sweet gas market. Pipe line companies who opposed the bill objected that it would force them to divide with small tract owners the markets they had obtained at great expense.

Governor Lee O'Daniel signed the bill liberalizing pension requirements and adding about 50,000 to Texas pension rolls. He pointed out that the bill had passed both houses with more than two-thirds majority, enough to pass any sort of tax bill or constitutional amendment, and declared it poor public policy to promise pensions without the funds to pay them.

Senator Joe Hill of Henderson who has introduced a Senate resolution calling for investigation of lobbying, said in a radio address that the governor was very much inclined to listen to the requests of the lobbyists. All in all, the entire legislative situation was snarled.

JOSEPH T. KINGWOOD, president Kingwood Oil Company, Effingham, Illinois, has returned from visiting operations in Texas and Oklahoma.

WEEK'S DRILLING HIGHLIGHTS

Southwest Texas

A new deep Yegua sand and a 2000-foot extension were indicated for Camada, Jim Wells County. North Clara Driscoll field's discovery well made 100 barrels daily, calling for 2 offsets. Five miles from Mathis, San Patricio County, a wildcat on a geophysical prospect set casing to test showings. Cole sand was found productive 2000 feet northeast of SRC field, Duval County. The second oil well was completed in White Creek, Live Oak County.

Oklahoma

Prue sand contributed a new pool in Osage County. Unexpected saturation in a shallow sand in Dora, Seminole County, will be tested. Gray got an extension, but two tests at Ramsey, Payne County, tended to define the field. Importance of Coyle pool, recent Payne County Wilcox sand discovery, was increased through addition of Hunton lime as another pay zone.

Kansas

Southeast of Sittner pool, Stafford County, a wildcat obtained a Kansas City-Lansing lime showing. Hafferman, Rice County, and South Trapp, Barton County, got extensions, but Arbuckle lime production was limited on the west at Hittle, Cowley County.

Illinois

A wildcat which had also shown saturation in Cypress sand contributed a new McClosky pool in Wabash County, just across the Wabash river from Indiana's Gibson County McClosky pool. Tonti Township pool, Marion County, was confirmed by completion of the second well for 142 barrels in 8 hours.

West Texas

Lower Pennsylvania lime yield oil in Page, a Schleicher County pool that has hitherto produced only gas and distillate. Dunes, Crane County, got a 3500-foot northwest extension. Two records were chalked up for North Cowden, one on potential when a well was rated at 4899 barrels, another for depth when a well passed 5020 feet.

East Texas

Prospects appeared bright for extension of Opelika gas distillate area in Henderson County 4000 feet northwest and 2½ miles southwest as 2 wildcats entered Georgetown lime at favorable levels. Mabank, same county, recorded its second producer.

North Texas

Browning pool, Clay County, was promised a 1¾-mile northwest extension and the northeast portion of K-M-A was extended 1½ miles east. A new shallow oil area was found near Diversion Lake, Archer County.

Rocky Mountain States

Pendroy Dome structure of Pondera County apparently will contribute Montana's next field; good shows were obtained in Madison lime. The first producer of the year for Garland field, Wyoming, was put on record.

Texas Gulf Coast

Two miles south and east of Dickinson field, Galveston County, a wildcat continued drilling after logging an oil and gas show at 8461 feet; another on North Cheek prospect, Jefferson County, cored oil sand at 6673 feet. A possible ¾-mile extension looms for Magnet, Wharton County.

South Louisiana

Showing in a test on La Pice prospect, St. James Parish, indicates the spot will become a gas-distillate pool. Gibson, Terrebonne Parish, got a south extension from completion of a gas-distillate producer. At Creole, offshore from Cameron Parish, a sand which has hitherto yielded only gas gives fair promise of producing oil. Woodlawn, Jefferson Davis Parish, was extended northwest by a gas well.

Comparison of Permits Granted for New Wells

STATE	Week Ending June 3	Total this Mo.	Total this Year	Total this Date Last Year	1938 Year Total
Arkansas	9	9	94	97	247
California	30	30	444	555	1,146
Louisiana	34	34	511	516	1,214
Kansas	41	41	609	689	1,453
Michigan	25	25	520	319	953
Oklahoma	54	54	900	908	1,978
Texas	173	173	4,573	6,094	12,369
Total	365	365	7,650	9,179	19,360

Summary of Wells Completed in the United States Week Ending June 3, 1939

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1939	Total this Date 1938
Alabama	....	....	....	....	.....	1	2
Arkansas	8	6	....	2	2,690	95	109
California	19	16	....	3	17,375	455	527
Colorado	....	....	....	....	.....	11	4
Florida	....	....	....	....	.....	....	....
Illinois	74	61	....	13	18,927	1,563	416
Indiana	3	1	1	1	63	61	46
Kansas	33	22	....	11	25,234	527	794
Kentucky	17	9	2	6	636	269	304
Louisiana	16	8	1	7	2,801	421	442
Michigan	37	24	1	12	9,593	549	345
Mississippi	....	....	....	....	.....	2	9
Montana	1	1	....	....	165	46	25
Nebraksa	....	....	....	....	.....	....	1
New Mexico	11	9	....	2	4,580	263	224
New York	9*	7*	1	1	26	200*	340*
Ohio	16	3	9	4	70	341	383
Oklahoma	40	28	2	10	7,621	871	939
Pennsylvania	26*	18*	6	2	18	528*	1,021*
Texas	198	138	7	53	111,752	4,171	5,756
Utah	....	....	....	....	.....	....	....
West Virginia	8	1	7	....	1	204	319
Wyoming	2	2	....	....	2,525	60	41
Total this week	518	354	37	127	204,077	10,639†	12,047‡
Total last week	523	368	31	124	158,021	10,121†	11,470‡
Total this year	10,639	7,267	739	2,633	9,891,679	....	.....

* Includes water-input wells. † Includes 1 Georgia completion. ‡ Includes 2 Tennessee completions.

Oklahoma Fields

Prue sand contributes new field in Osage County.

Magnolia finds Hunton lime productive in Coyle.

Tulsa.—Prue sand production in Osage County gave Oklahoma a new pool when drilled by Charles Petroleum Corporation's Pierce 1, NE SW 10-38-11e, in the northeast corner of the county. Nearest production is in Bowring pool five miles from the new well. The test topped the sand section at 942 feet and drilled to 990 feet, finding increasing saturation to bottom, and flowed 197 barrels of 38-gravity oil in 4 hours. Although dry holes three miles to the north and south of the producer tend to limit extensive expansion, the discovery is indicated to be on structural high between former tests.

Coyle pool, southwest Payne County, has been proven for Hunton lime production to increase the importance of the area. Previous and present drilling is chiefly for the Wilcox sand zone, proven productive in the pool discovery. Hunton lime was tested by Magnolia Petroleum Company in Cain 3, C W½ NE SW 12-17-1e. Hunton lime was topped at 4573 feet and coring between 4575 and 4623 feet recovered 12 feet of saturation on drill-stem test at 4628 feet, it started flowing after 6 minutes, the gauge of production indicating the well good for about 3250 barrels per day. Back pressure was 700 pounds with 2100 pounds bottom-hole pressure.

The well is not being completed in Hunton as 7-inch casing has been set at 4785 feet and drilling will continue to the Wilcox sand. Other wells in the pool are completed in the sand, with added production from Dolomite-above-Wilcox, which is partly saturated. Other tests drilled encountered some saturation in Hunton lime but this is the first attempt to test the productivity of the zone.

In Kiowa County, Gled Oil Company et al's Watkins 1, SW SW NW 20-7n-17w near Hobart (on a farmout from Shell Petroleum Corporation) has drawn two locations resulting from the continued good showing of the discovery well. West of the discovery, C. M. Beckett is starting a test on Carter lease with stake in NE 25-7n-18w. Tedford and Coombs will start Embree 1, NE 33-7n-18w, on a north trend through the town of Hobart. The discovery is continuing to produce through 2½-inch tubing at rates varying from 60 to 80 barrels per hour, gravity being 35 degrees API with no water showing. Geologists place the field on a high unconformity, a condition encountered in a number of tests in the area. No indication of either decreased flow or of pressure has been noted during production of the discovery.

Two outpost tests to Ramsey pool, Payne County, important to definition of the productive limits of the field, have been completed as failures after testing Wilcox sand, the producing body in the field. British American Oil Producing Company and E. H. Moore, Inc.'s Guilliam 1, SW NW NE 18-18-2e, northeast of production, is dry at 4911 feet and is being abandoned. Kirk-Green-Way, Inc.'s Kautz 1, NW SW SE 6-18-2e, north of production, drilled Wilcox sand from 4917 to 4934 feet to find nothing but water. Mid-Continent Petroleum Corporation's Graham 1, NE SE SE 13-18-1e, at the southwest edge of the communitized block, topped Wilcox at 4847 feet and drilled to 4867 feet in saturated sand. Seven-inch oil string has been landed at 4789 feet and the well will be an early completion.

A shallow pay sand has been penetrated by Malernee Oil Company in Swan 4, NW NE SW 33-7-6e, Dora pool of Seminole County, while drilling to deeper production in Cromwell sand. Seven-inch has been set at 2852 feet in the pay after saturation was encountered. This well will be completed in the Cromwell zone. However, during drilling of Swan 4, pits were filled from a stray sand lense encountered between 934 and 958 feet. Crude was heavy and dark, but of fair volume and operators are to locate Swan 4-A, a twin to the Cromwell producer to test the shallow sand.

In addition to this spotlight for Dora pool, three wells are now at deep levels, with J. F. Smith's Killingsworth 2, SE SW NE 28-7n-6e, at the north edge of production defining the pool in that direction by making only two barrels from Cromwell sand. Dora has been an active spot in the state during the past year following a redrilling campaign of the Seminole and St. Louis Districts.

Pure Oil Company's Noble 1, C NE SE 35-3s-1e, near Newport, Carter County, is a failure in Arbuckle lime. At 8485 feet it made a small gas flow and some sulphur water after being acidized with 25,000 gallons. Hole will be plugged back to test upper shows, particularly in Tulip Creek sand.

Gulf Oil Corporation has located Hendrie 1, C W½ SW SW 21-24-4w, northeast Garfield County. The wildcat will be drilled to 6200 feet or to Wilcox sand. This is a spot west of the Ridge and slightly to the west of the Garber-Crescent trend which strikes up through Marshall and Brown pools.

Just south of the Kansas state line, and on a trend from North Braman production, Amerada Petroleum Corporation and Roy Starr Oil & Gas Company have staked State 1, NE NE SW 13-29n-2w. Other tests in the vicinity have picked up encouraging shows in both sands and lime, with one well being completed as a small producer. State 1 will be carried to Arbuckle lime or commercial production.

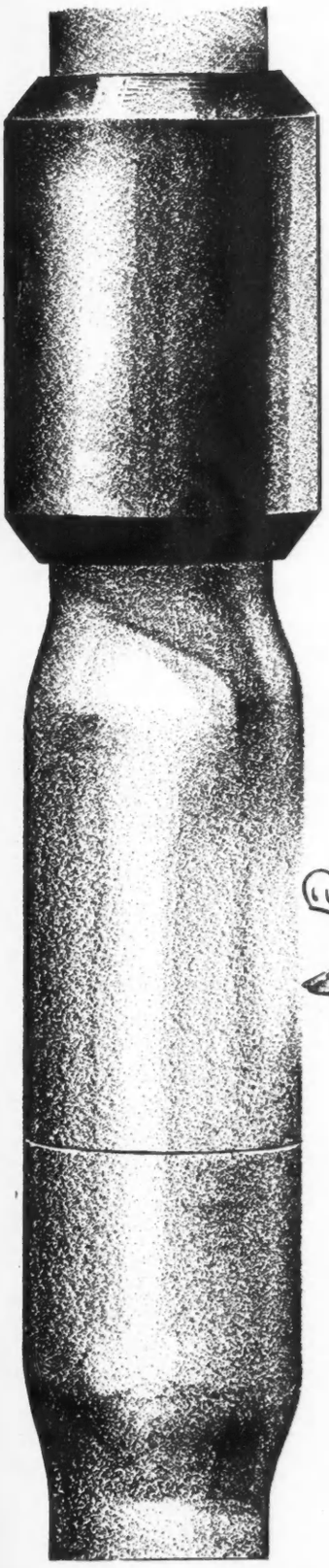
Continental Oil Company's Hudson 1, SE SE 8-4n-9e, wildcat test on the edge of McAlester Basin located in southeastern Hughes County is drilling below 4500 feet. Wapanucka lime has been passed although the marker does not necessarily indicate the well to be running high for control in the area is limited to a few previous tests. Nearest production is in Citra pool, at the southwest corner of the same township.

The same company's record-breaking deep test, Proctor 1, C NW 28-10-20w, Washita County, is drilling below 12,128 feet with the hole in good shape. The test is the deepest to be drilled in the upper Mid-Continent, the previous record being 11,415 feet.

Oklahoma Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Beckham—		
Northern, Van Vector 1, se sec ne 25-8n-22w	¶5	1038
Caddo—		
Ohio, Bigley 3, ne se ne 10-5n-9w	4212	3600
Carter—		
Raizen, Smalley 2, sw nwc ne 16-4s-3w	27	1352
Comanche—		
Wichita Oils, Palmer 12, ne se nw nw 28-2n-10w	3	466
Creek—		
McAdams et al, McSands 1, ne nw sw 31-17n-10e	540	2702
Big Four, Vance 3, c sw ne 24-19n-7e	35	2668
Hughes—		
Creede, McKinney 1-A, se swc sw 26-9n-9e	3	2057
Jackson—		
Fox, Mary 1, ne nw sw 2-1n-20w	19	1592
Burnham, Grimes-Hensley 2, se sw nw 10-1n-20w	88	1421
Lincoln—		
Mudge, Dowell 4, swc nw 10-14n-6e	110	3110
Wilcox, Sac & Fox 27, swc 15-14n-6e	45	3070
Starr, Morrow 1, sec sw 28-15n-6e	*	3270
Okfuskee—		
Shell, Gahagan 4, 50 ft w nec nw 11-11n-8e	431	3381
Shell, Replogle-Johnson 6, sw nw ne 11-11n-8e	*	3396
Replogle-Johnson 7, nw sw ne 11-11n-8e	*	3408
Erik, Scott 1, ne nw se 24-12n-8e	Abnd.	Lcn.
Oklahoma—		
Olsen, White 1, c ne ne 30-11n-1e	250	6070
Oklahoma Oil, Laskey 3, ne nw ne se 17-13n-11e	70	3270
Okmulgee—		
Corey, Borcher 5, c w½ ne se 24-16n-11e	1/6	232
Culpepper, Wisener 1A, nw nw ne se 25-14n-14e	*	1600
Pawnee—		
Grimes, Woods 1, c ne ne 9-20n-6e	*	2776
Pontotoc—		
Phillips, Norris 9, ne sw sw 25-2n-6e (otd 4236 ft)	36	4488
Norris 12, nw ne sw sw 25-2n-6e (otd 4262 ft)	35	4448
Elbar, Haynes 1, ne sw sw 14-2n-7e	*	1436
Davis, Gann 3, cwl ne se nw 15-4n-7e	*	500
Senora, Burke 1, nw ne ne 36-5n-4e	40	2622
Pottawatomie—		
Stephens, Zoeller 1, ne se sw 5-6n-5e	10	4153
Schafer, Zoeller 3, nec 6-6n-5e	135	4180
Smith, Bettis 1A, sec 17-7n-4e	51	3596
Telico, Smith 2A, ne sw se 26-7n-4e (otd 4160 ft)	180	4209
Amerada, Rice 1, sec ne 32-7n-4e (otd 4233 ft)	34	4326
Wood, Swan 3, ne sw se 36-7n-4e	149	4231
Big Chief, Green 1, nw sw se 29-7n-5e	250	4137
Taber et al, Miller 4, ne nw se 29-7n-5e	504	4148
Alma, Vanselous 1-A, csl nec se 32-7n-5e	140	3100
Stanolind et al, Billington "B" 2, c e½ sw sw 32-9n-3e	Abnd.	Lcn.
Seminole—		
Magnolia, Hawkins 2, se sw ne 6-7n-8e (otd 4209 ft)	22	3443
Pure, Reed 20, nw ne se 14-8n-6e	178	4388
Love et al, Brown 1, nw sw ne 33-8n-7e	*	3373
Barnsdall, Aldridge 1, ne se se 31-9n-8e	*	1879
Stephens—		
Keister, Jones-Quinn 6, sw sw nw se 23-1s-5w	24	642
Tulsa—		
Gilbert, Sanger 1, nw se se 9-19n-10e	*	1854

* Failures; † Junked; ¶ Million cu. ft. gas.



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Kansas Field Developments

Sittner pool outpost flows 180 barrels in 2 hours. Arbuckle production is defined on west at Hittle.

Wichita.—Kansas operators witnessed a dull week. One new pool may result from a successful test near expanding Sittner field of Stafford County, although further development may include it with nearby production. Two pools have been proven in additional pay strata and one field has received an extension.

What may prove to be a new field is the result of J. E. Trigg's semi-wildcat test NW NE SE 35-21-12w, on the southeast trend of Sittner pool, Stafford County. The well, Karl Tiechmann 1, drilled on a Shell Petroleum Corporation farm-out, found Arbuckle lime dry at 3650 feet, but a show obtained in Kansas City-Lansing at 3360 to 3372 feet, tested after perforating casing, yielded 180 barrels in 2 hours. Potential is to be taken.

Haferman Extended

Haferman pool, northwest Rice County, is being extended ½ mile south at H. B. Garden's Williard 1, NW NW SW 6-19-9w, bringing about 190 acres into the category of probable production. The test drilled Arbuckle lime to 3263 feet. Without acid the hole filled 2300 feet with crude. There was little gas. Due to the number of failures in the area the strike cannot be considered a major extension of Haferman production.

Burnett South pool, Ellis County, had a 1163-barrel-per-day completion from the Kansas City-Lansing section in Crown Petroleum Company's Hadley 4. Adjacent production is from the normally productive strata of the field, Arbuckle lime. The new producer found the pay at 3162 feet.

South Trapp pool, Barton County, received a minor extension to the northeast by Shell Petroleum Corporation's Bitter 3-B, SW NE 6-11-13w, which was treated with acid to obtain 53 barrels per day from 3358 feet, Arbuckle lime. This test evidently approaches the productive limit of the pool in this direction, but makes acreage between the well and more prolific production of the pool a better risk.

The western edge of the prolific Arbuckle lime production in Hittle pool, Cowley County, has apparently been defined during the week at Brewer, Winfield et al's Hughes 1, NEc SE 20-31-4e. The location is ¼ mile west and slightly south of a 17,000-barrel gusher recently completed. Operators drilled the edge test to Arbuckle at 3382 feet, but obtained only a 15-barrel well. The test ran 37 feet lower than nearest production.

Edge Well Shows

Skelly Oil Company's Tolliver 3, NWc SE 28-14-13w, on the southwest line of production in Letsch pool, Russell County, picked up good saturation and a porous section of Kansas City-

Kansas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Barton—		
Sinclair Prairie, Hoffman 5, cwl nw ne ne 7-16s-13w	3000	3371
Garden et al, Drake 1, nec 4-17s-13w	*	3432
Butler—		
Shawver, Stone 16, sw sec nw 2-25s-5e	28	2466
Landon et al, Tabing 1, nw ne ne 28-27s-6e	50	3084
Adair et al, Ramp 2, nwc sw 14-28s-7e	25	2711
Rex et al, Hutton 3, swc 14-28s-7e	35	2701
Coffey—		
Hart, Hannon 6, se nw sw 11-23s-13e	20	1831
Cowley—		
Hartman et al, Waite 5, nw ne sw 21-31s-4e	7811	3325
Wilson et al, Tomlinson 1, ne sw nw 28-31s-4e	Abnd.	Lcn.
Rhine, King 1, se nw ne 29-31s-4e	*	3440
Ellis—		
Cities Service, Hall "B" 12, sw ne nw 26-11s-17w	3500	3467
Ellsworth—		
Cities Service, Mehl 2, csl sw nw nw 19-17s-9w	345	3239
Graham—		
Continental, Kolste 1, nec se 16-9s-21w (salt water disposal well)		4218
Greenwood—		
McGinnis, Dehlinger 3, cel sec 3-24s-13e	*	1745
Rosen et al, Duke 1-A, ne sw se sw 28-26s-9e	25	2295
Harvey—		
Shell, Schmidt 1, ne nw sw 17-22s-3w (otd 3512 ft)	16	3272
Johnson—		
Gatlin, Fielbach 1, sec sw 3-12s-23e	*	712
Marion—		
Jones, Coleman 1, se sw nw 28-17s-4e	*	975
Ryan, Bucher 2, cwl nw ne ne 28-17s-4e	Abnd.	Lcn.
McPherson—		
McPherson Drlg. Co., Finkle 1, c ne nw 23-19s-2w	118	2959
Meade—		
Pacific-Midwest, Rexford 1, ne se sw 8-30s-29w	*	1350
Crogin, Adams 1, nw nw se 22-34s-30w	*	200
Reno—		
Westgage-Greenland, Haggerty 2 "A", csl se ne sw 36-22s-5w	Abnd.	Lcn.
Rice—		
Hollow, Stout 1-A, nw ne se nw 6-18s-10w	4060	3223
Skelly, Purcell 2, sec nw 33-19s-9w	Abnd.	Lcn.
Gulf, Linke 1, c e½ ne se 36-19s-10w	327	3283
Lauck, Granger 1, c e½ nw ne 36-19s-10w	*	3301
Phillips, Proffitt 1, c e½ ne ne 8-20s-9w	211	3263
Davis, Anna 2, ne se sw 10-20s-9w	446	3232
Rooks—		
Broadview, Beardsmore 1, nw se sw 2-9s-16w	517	3210
Russell—		
Stanolind, Austin-Ashbey 3, ne nw sw 30-12s-15w	21	3285
Darby, Boxberger 1, swc se 22-14s-14w	1692	3083
Phil-Han, Rinehardt 1, se ne ne 24-14s-15w	506	3258
Coralena, M. Dumler 1, sec nw 36-15s-14w	542	3321
Saline—		
Carey, Crawford 1, nw sw ne 26-13s-3w	*	3632
Stafford—		
Continental et al, Saunders 1, nwc se 12-25s-13w	1939	4130
Sumner—		
Shawver et al, Nice 1, cwl se ne sw 16-33s-2e	*	3565
Woodson—		
Sheedy et al, Long 1, sec sw 28-26s-14e	*	1550

* Failures; † Junked; ¶ Million cu. ft. gas.

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Lansing and looks like a good producer. Other wells in the area to the east and north have gauged 700 barrels and more on potential test.

An important test in Dodge City Basin west of Mullinsville, Kiowa County, Sinclair Prairie Oil Company's Price 1, NW NW SW 22-28-20w, is drilling below 4350 feet with a 6000-foot objective. Location of the test is about 25 miles north and slightly east of Morrison pool, Clark County, and is the result of both seismic and surface work. There is neither gas nor oil production in the county.

South of Kiowa County in Comanche, another stake is being driven for a try in Dodge City Basin. The well is McMoran 1, CSE NW 25-34-16w, west of Aetna. Indian Territory Illuminating Oil Company and Kerlyn Oil Company are joint operators. Surface indications, not always reliable in the area, point to a number of structures in this area and along a trend through Comanche, Barber and Harper counties.

A third Dodge City Basin test, Indian Territory Illuminating Oil Company and Champlin Refining Company's Koehn 1, CNE SW 34-28-29w, Gray County, is drilling about 800 feet. Nearest production is in the Hugoton area of the southwest corner of the state, where gas is produced.

A small gas completion in Sherman County, near Goodland, has called attention to shallow development for gas in this sector. Goodland Independent Gas Company completed a 50,000-foot gasser at Keeran 1, 30-8s-39w. Production is reported to be from a sandy shale at 1307 feet. Few deep tests have been completed in this area; Arbuckle having been dry where drilled.

Hugoton hearing reset

Holding in suspension its orders regarding production, sale and conservation of natural gas in Hugoton field of southwest Kansas issued last September, Kansas Corporation Commission has scheduled a rehearing for June 12 at Wichita to consider further observation. The rehearing will chiefly concern itself with prevention of drainage of gas across lease lines, excessive production from individual tracts, equitable takings, and an adequate allowable formula.

Texas permits total 173 for the week

Permits for drilling 173 new wells in Texas were approved by the Texas Railroad Commission last week, one more than was allowed the week before.

Two permits were approved in the East Texas field in Gregg County, while eight locations were reported from the remainder of the East Central Texas area.

Operators in West Texas were allowed 37 permits including 13 in Yoakum County, and 15 locations were reported from West Central Texas, all in Jones County.

The commission approved 39 locations in Southwest Texas, and 20 in the Gulf Coast area.

North Texas operators were permitted to drill 36 new wells including 10 in Archer County. One location was approved in the Panhandle in Hutchinson County.

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Illinois Developments

Wabash County McClosky discovery is good pumper. Tonti Township strike confirmed by 400-barrel well.

Olney, Ill.—R. S. Hayes' et al's Anna Schultz 1, SE NW SW 7-3s-13w, Compton Township, Wabash County, with a pumping production of between 300 and 500 barrels daily on completion in the McClosky lime, topped at 2872 feet, opened a new pool across the Wabash River from Indiana's Gibson County McClosky pool. It had saturation also in Cypress sand.

Confirmation of a new Marion County pool, the fourth to be opened in that county in the current development campaign, was afforded by Arthur "Tex" Harvey's Marion Building & Loan 2, NE SE 33-3n-2e, Tonti Township, when it swabbed 142 barrels of oil and no water in 8 hours prior to acid treatment. It is an indicated 400- to 500-barrel producer. The first test drilled on this lease made 157 barrels of oil and some water on a 24-hour test.

In Franklin County, Gulf Refining Company's E. B. Hinman 1, SE SW NE 19-5s-3e, Ewing Township, was swabbing through tubing from the McClosky, topped at 2878 feet. It was to be acidized.

White County Disappointments

Two of three White County wildcats which a week ago had reported encouraging shows were apparently scheduled for abandonment. Sun Oil Company's C. W. Ford 1, NW NE NE 18-5s-14w, Hawthorne Township, southwest of New Harmony, had salt water in the McClosky when plugs were drilled. It may be plugged back to the Cypress where some saturation was reported. Mazda Oil Company's Carmi Baptist Orphanage 1, SE SE NE 22-5s-9e, Carmi Township, had salt water

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Illinois Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Clay County—		
Pure, Leon Clark 6	207	3095
Taylor Consolidated 1	920	3095
Taylor Dr. Co. Muilberger 1	*	2507
Dick Duncan, Huber 1	*	2525
Clinton County—		
Shell, Buehler 6A	53	1220
Ed. Wright, Homan 1	*	1381
Fayette County—		
Carter, W. Durbin 2	201	1542
J. Durbin 2	54	1573
L. Rhodes 1	236	1568
Fred Ireland 1	162	1515
B. Miller, Kimbrell 1	79	1516
Clara McCann 1	356	1586
Leroy Cummings 5	510	1580
Ramsey-Hopper 5	210	1592
La Verne Deal 4	156	1498
Ola Harper 5	147	1530
Florence Harding 7	*	1609
E. Frank Jones, McCann 2	25	1554
Shell, Hugo 3	157	1579
Stewart Oil Co., Durbin 5	*	1647
J. H. Vandenbark et al, Breeze 1	160	1553
Breeze 2	6	1626
Breeze 3	125	1551
Williams et al, Smith 10	50	1565
Jefferson County—		
Carter, Sanders 2	216	1952
Pyramid Pet. Co., Inland Steel Co. 1	*	3101
Marion County—		
Texas Co. L. Hawthorne 8	126	1822
E. L. Snider 3	567	2063
E. Snider 4	63	2132
M. Bryant 6	147	1883
J. Williams 4	196	1863
J. Williams 5	133	1882
E. Luttrell 6	189	2179
H. Heyduck 6	231	1883
City of Centralia 20	343	1799
City of Centralia 26	490	1820
City of Centralia 28	860	2061
L. Hawthorne 3	126	1986
L. Hawthorne 11	210	1790
L. Hawthorne 12	140	1994
L. Hawthorne 14	371	1798
V. Kalkbrenner 15	364	1786
V. Kalkbrenner 19	315	2000
B. Hawkins 7	105	1796
B. Hawkins 12B	819	1995
W. Richardson 5	889	1719
Richards 9	875	1956
Winegarner 2	252	1910
Easley 9	518	1890
Ohio, C. E. Lloyd 6	130	1849
C. E. Lloyd 7	150	1868
C. E. Lloyd 9	339	2071
C. E. Lloyd 10	700	2076
Zephyr Dr. Co., Lankford 5	*	2140
I. D. Laine, Dempsey 5	336	1784
Henswy, Yoos 1	*	1395
Helmerich & Payne, Anderson 2	60	2147
W. R. Curry, Young Strip 2	700	2000
Potter Bros., M. & I. RR. 1-A	1100	2080
Magnolia, Phillips 6	1560	2100
Richland County—		
Mabee Dr. Co., Sparr 3	126	2618
Pure, Cazel 7A	331	2627
Howard Cazel 8A	106	2630
Mammoth P. & R., Stanford-Heitz 6	*	3028
Washington County—		
Pollack, Leibrock 1	*	1379
Magnolia, Francis 1	137	1289
Manitou Pet. Co., Oak Grove Cemetery 2	484	1295
Shell, Klozak 1	121	1284
Wilson et al, Greenburg 1	*	1339
Wayne County—		
Pure, Mullinax Consolidated 1	92	3164
J. T. Hilliard 1A	81	3316
G. A. Manahan, Fitch 1	17	3095
Whitty et al, Duke 1	*	3402
Iroquois O&G Co., Winzenberger 1	*	3423

* Failures; † Junked; ¶ Million cu. ft. gas.

when casing was gun-perforated opposite the Cypress sand at 2876-2900 feet. It had previously reported water along with an oil show in lower McClosky. J. B. Leggett's Matilda Hohn 1, NE NW SE 32-3s-14w, Gray Township, was still testing a small layer of McClosky saturation, topped at 3018 feet.

Also in White County, Superior Oil Company's E. M. Futton 1, C SW SW NE 26-4s-14w, 1½ miles southwest of New Harmony, was abandoned at 3056 feet. It had topped the Cypress sand at 2685 feet.

Carl Robinson et al's E. E. Leach 1, SW NW 14-2s-8e, Grover Township, Wayne County, ran a squeeze job in an effort to shut off water, and its effects were in doubt. Three miles southeast of Fairfield, the wildcat cored 11 feet of Benoist sand saturation, 7 feet of Rosiclare and 14 feet of McClosky. Completion was being attempted in the latter two formations, and Robinson was considering another hole to test the Benoist. The well would either open a new pool or provide a 2-mile north extension to the Barnhill pool opened several months ago.

Important Wildcat Started

Outstanding among announcements of new tests was Gulf Oil Corporation's G. W. Baldwin 1, SW NW 4-1s-1w, 2½ miles northwest of Irvington and a mile southwest of Nolting's station. It had surface pipe set at last report. The wildcat is of unusual importance because of its location on a highly favorable structure. Rumors of Gulf's test of the area had been current for more than a year, but a delay in obtaining one lease in the area held up the location.

Jay Lickey, Wichita Falls contractor who has been drilling in Illinois for Cypress Oil & Gas Company and other operators during the past two years, spudded Quick 1, Section 35-3n-1e, Carrigan Township, as a Marion County McClosky lime wildcat test.

In the Sandoval area of Marion County, Menhall Corporation and Benoist's Benoist 1, SE NW 8-2n-1e, started coring for the Aux Vases at 1500 feet and planned to continue the coring for 75 feet. It will then be continued to the Niagaran lime formation, expected a little below 3000 feet, in an effort to confirm a pool opened several months ago by Southwestern Oil & Gas Company's Benoist 21. Two other Niagaran lime attempts in the area

West Virginia Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Boone County—		
Owens-Libby-Owens, Peytonia Coal Co. 15	¶.11	4214
Cabel County—		
Elkins Gas Co., Paugh 2	¶.18	3437
Calhoun County—		
McIntosh & Grimm, Lockney 1	¶.35	2298
Clay County—		
Pittsburgh & W. Va. Gas Co., Duffield 7666	¶.50	1721
Kanawha County—		
United Fuel Gas Co., Schmittauer 4769	¶6.05	5136
W. F. Beane 4814	¶8.83	5030
Pleasants County—		
M. Kelley et al, P. Hammatt 2	1	1997

* Failures; † Junked; ¶ Million cu. ft. gas.

Pennsylvania Completions

Bradford District

Company, Well and Location	Init. Prod. Bbls.	Depth
Ryder Scott Co., Fee	3	....
Starr & Wingrove, Potter	½	....
T. H. Givan, Cummings	1	....
Forest Oil Corp., 2 wells	2	....
Forest Pet. Corp., 2 wells	2	....
Niagara Oil Corp., 2 wells	2	....
Niagara Oil Corp.	1	....
Bradford Transit Co., 4 wells	4	....
Bradford: Water Intake Wells		
Forest Oil Corp.	...	....
Forest Pet. Corp.	...	....
Butler-Armstrong District		
Schaffner et al, Galloway	½	....
Middle District		
S. Y. Ramage, Jr., Henderson	1	....
New York-Pennsylvania: Gas Field		
Penn-Brad Oil Co., Warrant 5574	*	....
Armstrong County—		
Equitable Gas Co., J. Wells 3246	¶.08	3468
Greene County—		
B. Wright et al, Strawn 1	¶.12	2775
Washington County—		
Manufacturers L&H Co., Parkinson 3578	¶1.15	2859
Fayette County—		
Nollem O&G Co., Tonechki 1	¶.62	645
Potter County—		
Updegraph, N. Patterson 1	*	4901
Cunningham Nat. Gas Co., Markey 1	¶13.50	4808
Washington County—		
Penn Ohio O&G Co., Russell 1	¶.09	3420

* Failures; † Junked; ¶ Million cu. ft. gas.

New York Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegany County—		
Richardson et al, Blackman farm, Alma	6	1650
Gray et al, Smith & Gray farm, Genesee	5	1392
Karl-Weller Oil Corp., Peavy farm, Genesee	4	1365
Ella Oil Corp., Crandall farm, Bolivar	5	1341
Tress Oil Co., Northrup farm, Bolivar	6	1460
Allegany: Water Intake Wells		
Budd Oil Co., Anderson farm, Alma	...	1423
Bradford Oil Co., Lot 8, Genesee	...	1390
Steuben County—		
New Penn Dev. Co., S. Allen 1	*	4178
E. G. Cady 1	¶1.40	5042

* Failures; † Junked; ¶ Million cu. ft. gas.

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You need but a single adjustment to give you any arc length or to meet any welding condition. Select the desired amperage and the generator automatically responds with the proper open-circuit and arc voltage. Uses no such corrective devices as reactors, resistors, rheostats, separate stabilizers or exciters.

Our Saving in Cost Is Passed On to You

New economies in mass production bring you the greatest value ever in a high-grade welding service. It's a great forward step in reducing your own welding costs.

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have since been abandoned. The Benoist 1 is a little less than 400 feet west of the Benoist 21.

Two possible extension tests of the North Olney area were being closely watched. Andrews et al's Wattleworth 1, SW SW SE 26-4n-10e, Olney Township, set casing to 8 feet of tight McClosky pay below 3124 feet. It was bottomed at 3126 feet. Skinner, Centralia Refinery et al's Sylvan Iris School 1 was swabbing and bailing after a 6000-gallon acid treatment.

Kingwood Oil Company's McWhorter 1, C E½ SE NW 15-6n-6e, Union Township, Effingham County, was pumping 9 barrels of water an hour from St. Louis lime at 3050 feet after plugging back from below 6500 feet.

Kentucky Fields

Well near Owensboro to drill plug atop McClosky

Owensboro, Ky.—Snowden & McSweeney's C. H. Abell 1, five miles northeast of here, was being closely watched as a possible confirmation well of the new McClosky pool opened several weeks ago by J. C. Preston's C. H. Abell 1. The second well stopped drilling at 1410 feet, just above the McClosky, and was to have plug drilled and the McClosky penetrated with a spudder.

The discovery, across the Hardinsburg road from Snowden & McSweeney's test, flowed for two hours after acid treatment last week and at last report was undergoing a pumping test.

After passing through McClosky saturation believed insufficient to make a well, Phillips Petroleum Company and Carter Oil Company's B. H. Parker 1, Hopkins County, was drilling below 3000 feet on the way to the Devonian, expected at about 5000 feet.

Fred Phillips announced Nichols 1 as a wildcat test south of Carrollton, between Livermore and Central City on the L. & N. Railroad. It will seek the Jett sand at about 1300 feet. Geologists of Ashland Oil & Refining Company and Lion Oil & Refining Company have worked the area, and their findings have been re-checked by geologists of Phillips Petroleum Company and Skelly Oil Company.

In the Shearn pool of Muhlenberg County, discovered by Fred Phillips several months ago, this operator completed the Shearn Coal Company 4 for 45 barrels daily. It brings to three the successful completions on this lease, the No. 3 well having proved dry. In the same area, Phillips Petroleum Company's Shearn Coal Company 2 was deepening after getting an oil show at 1117 feet. The No. 4 on Phillips Petroleum Company's lease was completed at 1525 feet for 50 barrels daily.

Kentucky Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Breckenridge County—		
Douthitt et al, Waggoner 1	*	380
Butler County—		
Butler County Oil Co., Brown 2	10	391
Jack Peurifoy, D. Porter 2	*	139
Daviess County—		
Master Oil Co., Baird 1	50	1325
Daugherty & Ellis, Lett 4	150	1320
Ashby et al, Jagoe 5	150	1877
Cleopatra Oil Co., Nesmith 1	*	2265
Floyd County—		
Kentucky-W. Va. Gas Co., Dillon 566	¶.10	2739
Hancock County—		
J. W. Tuttle et al, L. Boling 1	*	400
Henderson County—		
Imperial O&G Products, Freeman 6	80	2208
Lee County—		
Price Fraley Gray 1	20	....
Estin, R. J. McLyn 30	*	....
Muhlenberg County—		
Fred Phillips, C. Boggess 2	25	1542
Phillips Pet. Co., Boggess 1	150	1528
Ohio County—		
Dehart et al, A. J. Early 10	*	547
Pike County—		
United Carbon Co., Republic Steel Corp. 1779	¶.10	3793
Bent Mountain O&G Co., Varney & Deskin 1	1	3542

* Failures; † Junked; ¶ Million cu. ft. gas.

Ohio Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Athens County—		
Ohio F. G. Co., Williams 2	¶.20	1507
Leonard Wallace, Hill 1	¶.05	1446
Guernsey County—		
Jewell et al, Grimsley 1	*	1287
Knox County—		
H. E. Parkins, Steele 1	¶.83	2845
Norris Oil Co., Norris 2	5	557
Ohio F. G. Co., Parrod 1	¶.13	2778
Lorain County—		
Wm. Dempsey, M. J. Rink 1	*	2343
Medina County—		
Alex McCrea, Billman 1	¶.48	2642
Preston Oil Co., Parent 29	60	414
Monroe County—		
Houge et al, Franks 1	5	1385
Stark County—		
East Ohio Gas Co., Hoover 1	¶.22	4641
A. Bechler 1	¶1.12	4596
Tuscarawas County—		
Lyons Co., F. J. Haas 1	*	4675
Washington County—		
McTaggart Gas Co., Barrett 2	¶	1812
Bowman & Hall, Wilson 1	¶.37	1598
Wyandot County—		
R. C. Jones, Tehnel 1	*	1417

* Failures; † Junked; ¶ Million cu. ft. gas.

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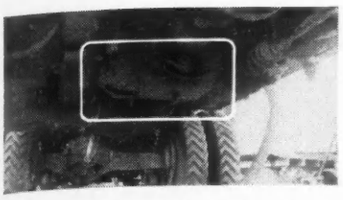

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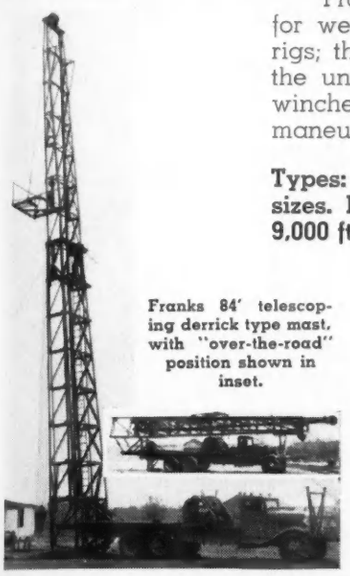

Franks 84' telescoping derrick type mast, with "over-the-road" position shown in inset.

Franks pioneered and perfected final drive friction clutches for well servicing winches, spudding units and rotary drilling rigs; thus eliminating the shock load and consequent repairs to the units, derrick, and equipment. More flexible drive. Franks winches facilitate: anchorage, least hold down expense, more maneuverability, and faster work.

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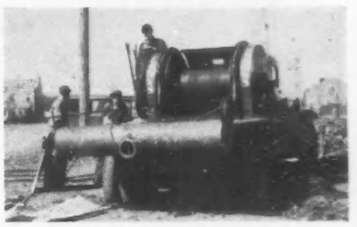

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Types: 4 sizes pipe masts for servicing wells from 1,000 to 4,500 ft.; and telescoping mast for servicing wells to 6,500 ft.

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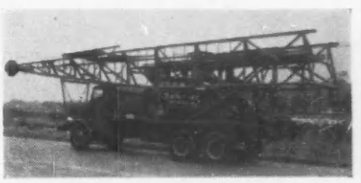
Franks pioneered the "slim-hole" 100% portable rotary drilling unit, for exploration and production drilling to 7,500 ft. Franks largest model, K-5000; capable of going to 7,500 ft. is a complete trailer-mounted unit. All Franks truck and trailer-mounted and skid type rigs include: derrick type mast, crown block, stacking board, power screw mast raising device, swivel, rotary table, kelly, drawworks, regular and automatic catheads, mud pump, two engine power plant with facilities for compounding engines to any drive, extra capacity transmission, all unitized for economy of operation and fast rigging up and tearing down.

Types: Truck, trailer-mounted, and skid. Capacities from 1,000 to 7,500 ft.



"Over-the-road" view of Franks Model A-4000-A. Derrick extends to same position as shown in above mast photograph.

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See Composite Catalog Pages 683 to 702

Indiana Fields

Black Township well pumps 63 barrels from McClosky

Evansville, Ind.—A. Grewe & August Kruse's Pauline Scherer 1, NW NW SW 13-7s-13w, Black Township, Posey County, yielded 63 barrels on a 24-hour pumping test to climax days of work and coaxing by operators. It is bottomed in the McClosky at 2713 feet.

Trio Oil Company's Frank R. Swallow 1, SW SW SE 32-6s-7w, Luce Township, Spencer County, installed a cable rig to deepen in the Waltersburg, topped at 990 feet, where some saturation was reported. In this county, Tide Water Associated Oil Company's Lucy P. Hyne 1, NW NW NE 10-4s-14w, Rodd Township, was abandoned at 3003 feet. Exchange Oil Company and Yingling & Hayes were also interested in this test.

The third gasser was completed in the new Rockport pool of Spencer County, bringing potential production in this area to about 15,000,000 cubic feet daily. W. W. Damron's A. J. Kinney 1, NW NE 19-7s-6w, topped the Waltersburg sand at 892 feet and was completed at 900 feet for more than 3,000,000 cubic feet daily. This operator's Leah Kopp 1, to the east of the gas pool discovery, was nearing the Waltersburg.

Also in Spencer County, W. W. Damron was moving in materials for F. Miller 1, one location east of the Cora Niles 1, NE NW 2-8s-7w, completed as an oil well in the Barlow sand.

Near the Heusler Dome pool in Posey County, Illiand Oil Company's Charles Strueh 1, was testing the Tar Springs or Jett sand. Saturation had been reported in both the Waltersburg and Jett.

After apparently successfully completing a squeeze job in the Salem, Parshall-Graham Oil Company's Maude Jordon Simpson 1, SW NW NW 23-1n-10w, Decker Township, Knox County, was testing. Michel Brothers Henry Decker 1, NE NE 9-1n-11w, Decker Township, had sulphur water in the McClosky and was shut down for orders.

Indiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Posey County—		
A. Grewe & August Kruse, P. Scherer 1	63	2720
Tide Water et al, Hyne 1	*	3000
Spencer County—		
W. W. Damron, Kinney 1	¶3.50	900

* Failures; † Junked; ¶ Million cu. ft. gas.

FOR PIPE'S SAKE—Use Kinzbach-Ajax Slips Whether it's Drill Stem or Tubing

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The Rotary Slips

No scarring of drill pipe and casing.

Greater strength for today's deep well drilling.

Two alloy steel pins hold inserts in each segment.

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Even distribution of load over entire gripping surface.

Drilling mud drains back into hole, not on derrick floor.

Moderate weight.

Handles several pipe sizes by changing inserts.

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Gated bowl and grooved slot permit easy application to tubing and insure correct position.

Upper bowl flange serves as shelf for slips when not engaging pipe.

Lower flange fits square of rotary table when running tubing through rotary.

Four-piece unit provides maximum flexibility. 2" and 2½" tubing handled with same segments by changing inserts.

Length and position of handles provide maximum safety.

Segments cored to drain fluid back into hole.

Positive hinges prevent slips opening to the point of difficult handling.

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Three state geological societies plan joint trip

The Kansas Geological Society will join with the Missouri Geological Survey, the Illinois State Geological Survey and the Illinois Geological Society in conducting its thirteenth annual field conference August 30 to September 3. The pre-Pennsylvanian rocks of southern Illinois and southeastern Missouri will be the subject for study.

Dr. H. A. Buehler, Missouri state geologist, and Dr. M. M. Leighton, chief of the Illinois state geological survey, will serve as directors of the conference. H. S. McQueen, of the Missouri survey, will be the leader of the conference while geologists are in Missouri, while Dr. J. Marvin Weller, of the Illinois survey, will serve as leader in Illinois. Cities to be visited include St. Louis, East St. Louis, Cape Girardeau, Old Fort Chikaskia, Anna, Vienna, Ste. Genevieve, Cario and other interesting river towns.

Leslie M. Clark, district geologist for Shell Oil Company, is chairman of the Kansas society's field trip committee and in charge of arrangements for the event. Assisting him are Zenas M. Stucky, district geologist for Cities Service Oil Company; Carl I. Larson, Stanolind Oil & Gas Company, and Virgil Cole, Gulf Oil Corporation.

Hoosier Gas Corporation buys Indiana properties

Properties of Indiana Southwestern Gas Corporation and Newton Pipe Line Company, linking the Indiana cities of Vincennes, Washington and Princeton, have been acquired by Hoosier Gas Corporation.

Not involved in the purchase is the Newton firm's line from Francisco, in Gibson County, to Evansville, and the Newton company also retains certain rights for transmission of gas through the pipe line system acquired by the Hoosier company. S. V. O'Lenic, division manager of the purchasing company, said that field employes of Indiana Southwestern and the Newton companies would be retained.

West Texas Fields

Lower Pennsylvania lime yields oil in Page field.

Dunes pool, Crane County, is extended 3500 feet.

San Angelo.—Discovery of oil production in the Page gas-distillate pool, Schleicher County, was made May 27 in the lower section of the Pennsylvanian series. Lone Star Gas Company's Bert Page-Humble 1, near C NW NE GH&SA Section 30, Block L, began showing free oil from lime at 5727-30 feet, with an increase at 5741-46 feet. The well filled 4150 feet with 37.8 gravity oil. A string of 5-inch pipe is enroute to acidize and complete, as it was drilled with open hole below the 7-inch casing seat at 4095 feet. In the event of an oil completion, ownership of the well will revert to Humble Oil & Refining Company in accordance with lease assignment terms.

The Page area is on the southeast flank of the Permian basin, and may be the deepest oil source in West Texas, excepting Ordovician production in the Big Lake and Sand Hill fields.

Lone Star Gas Company's strike was a surpise development as the test, situated ⅞ mile southeast of the largest of Cooper Gas Company's two shut-in gas-distillate wells capable of producing from the Strawn series at the 5500-foot level, checked 230 feet low on structure and missed the gas horizon. Lone Star Gas Company's Page-Humble 2, a mile northwest of the discovery gasser, also proved low and was listed for abandonment in water at 5773-98 feet with an elevation of 2386 feet. The prospective oil producer has an elevation of 2401 feet. The gas company's Page-Shell 1, ¼-mile northeast of gas production, was drilling at 4630 feet.

West Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Andrews County (Emma)—		
Anderson-Prichard Oil Corp., Cowden 5	1169	4320
Osage Drl. Co., University-Phillips 3	1380	4240
Crane County (Sand Hills)—		
Humble, Tubb 27	1825	4420
Crockett County (Crockett)—		
Lu-Tex Oil Co., University-Gulf 3-17	22	1520
Ector County (Foster)—		
Stanolind, Griffin 1	471	4320
Witcher 13	987	4195
Ector County (Goldsmith)—		
Gulf, Goldsmith 191	528	4180
Goldsmith 193	528	4189
Ohio, Cummins 4	894	4207
Phillips-Pure, Cowden 61	1304	4155
Ector County (Johnson)—		
Sinclair Prairie, Johnson 4-A	478	4223
Ector County (North Cowden)—		
Delaney et al, Smith 5	1976	4382
Gaines County (Wasson)—		
M. B. K. Drl. Co., Wasson 4	1154	4990
Jones County—		
Geo. Callihan et al, D. E. Prewitt 1	*	2672
Consolidated Oil Co.-Ray Bros., McCaskey 4	320	3287
Bert Fields & C. King, Humphrey 2-B	3088	3274
Gregg Oil Co. et al, Osement 1-a	*	2667
Iron Mt. Oil Co.-Humble, Cockrell 1	*	3314
Olga Davis 1	1097	3274
Lewis Prod. Co., Muenzler 3	538	3279
Jones County (Wildcat)—		
Humble, Sears 1	*	3050
Snoddy et al, Stephens 1	*	2301
Pecos County (Shearer)—		
Street et al, Shearer-Texas Co. 9	650	1473
Pecos County (Taylor-Link)—		
Eastham et al, University-Standard 3	245	1662
Humble, University 1-J	98	1698
Letwin-Lippett & Kallison, University 2-D	508	1650
Schleicher County (Page)—		
Lone Star, Page-Humble 2	*	5799
Upton County (Gulf-McElroy)—		
Gulf, McElroy 194	121	3016
Upton County (McCamey)—		
Parker Drl. Co., R. King-Texas Co. 2	*	2365
Alf Reese, Jr., Pittman et al, Cordova Union-Texas Co. 2	468	2180
Ward County—		
Sahara Oil Corp., Blair-Republic 2	35	2173
Dorr-Atlantic 5	53	2091
Stanolind, Brown 3	491	2377
Ten-Bell Oil Co. (was L. F. White), Monroe-Rector 1	26	4710
Geo. Wallace et al, R. Avery 1	*	2118
Western Well Service Corp., Lackland 6-6	168	2102
Winkler County (Halley)—		
Skelly, Halley 30	832	2811
Winkler County (Henderson)—		
W. K. Royalty Co., Walton-Humble 6-B	1440	3050
Yoakum County (Bennett)—		
Shell, Hodges 2	971	5237
Yoakum County (Wasson)—		
Aloco Oil Co., Nystel-Texas Co. 1	561	5150
Humble, J. H. Lynn 3	435	5110
H. O. Wooten 12-a	960	5150
H. O. Wooten 13	1154	5150
Murchison et al, Elliott-Standard 7-B	894	5094
Tide Water Associated, H. Koontz 4	1048	5130
Wynne, Tr., Thomas 4	682	5150

* Failures; † Junked; ¶ Million cu. ft. gas.

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RIGHT: This low pressure SHEAR-RELIEF Valve is for all hydraulic service up to 1000 lbs. The high pressure type, for larger pumps and flow line service, has a pressure range up to 2750 lbs. per sq. in.

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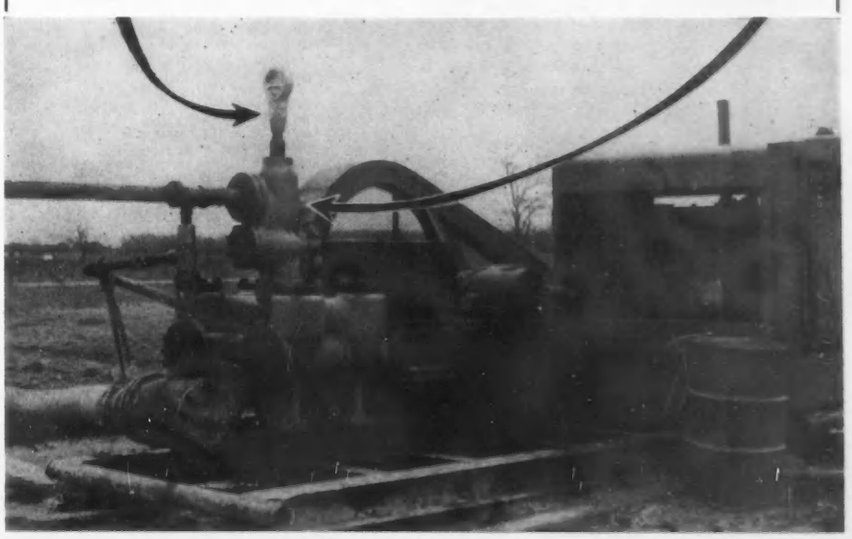


using rotary. This 3-well development program was intended to augment the company's gas supply for San Angelo and nearby towns.

Plugging orders are due to be issued for Humble Oil & Refining Company's Ozona-Barnhart 1, Crockett County Ordovician prospect which is the deepest operation currently in the district. Formation tester used at 8719 feet is reported to have failed to show oil or gas.

Expansion of the Dunes pool, Crane County, 3500 feet to the northwest occurred when Standard Oil Company of Texas' Adams 1, NW SE SE Section 12, Block B-24, flowed 60 barrels oil in 13 hours following a 600-quart nitro shot at 3353 feet.

Record Potential

A record potential flow for the north Cowden field, Ector County, was established last week when Sinclair Prairie Oil Company's Hugh Corrigan 5, SWc SE T&P Section 25, Block 43, T-1-N, earned a rating of 4899 barrels after using 5000 gallons of acid in broken pay at 4398 feet. This well is on the east flank of the structure and north of recently completed prolific wells. Gulf Oil Corporation's Holt 1, ½ mile west of the north end of the field, attained a new depth record in drilling at 5020 feet, having missed the regular oil pay and also the main body of sulphur water.

Sloan-Zook Company and Ferndale Drilling Company's Johnson 1, SWc T&P Section 34, Block 43, T-1-S, 1½ miles northwest of Johnson pool and 2⅞ miles south by west of the North Cowden field, is registering a favorable structural position in drilling at 2900 feet. Top of anhydrite was called at 1765 feet, and first salt at 1790 feet, with an elevation of 3011 feet.

Shell Oil Company has subleased three leases to the Osage Drilling Company in Gaines and Yoakum Counties that require the immediate drilling of one test on each to take care of offset drainage. The drilling concern was assigned the Glen Crain 41-acre strip, situated on the west end of W. T. Section 216, Block G, Seminole field, Gaines County. In the Wasson field, the deal involves the SE Section 770 and NW Section 834, J. H. Gibson Survey. Identical sliding scale royalty terms apply to each tract, with Shell receiving ⅛ royalty on production ranging from 40 barrels to 150 barrels daily.

Humble Oil & Refining Company's Caswell 1, C SW SW PSL Section 10, Block A-24, south central Gaines County wildcat, was coring broken lime and anhydrite at 4600 feet. A 17-foot core pulled at 4575 feet carried an oil stain, but lacked sufficient porosity to warrant a production test. Top of the brown lime was logged at 3840 feet, with an elevation of 3344 feet.

Texas Panhandle Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
Skelly, Schafer 93	584	3175
Texoma Nat. Gas Co., Schafer 7-S	¶40	2666
Gray County—		
Magnolia, Fee 28, lse No. 227	119	2889
Hutchinson County—		
Gulf and Panhandle, Dial 92	141	3030
Pennowa Oil Co., Thompson 1	20	3095
Lipscomb County (Wildcat)—		
Darrouzett Oil Corp., E. B. Pugh 1	*	3401
Moore County—		
Texoma Nat. Gas Co., J. B. Schlee 1	¶18.6	3466
Wheeler County—		
Vaughan et al, Loter 1	¶15.6	2196

* Failures; † Junked; ¶ Million cu. ft. gas.

North Texas Fields

K-M-A and Halsell-Browning extensions in prospect.

Walnut Bend south outpost headed for Ellenberger.

Wichita Falls, Texas.—An abnormally large quota of exploratory tests in the deep lime series are commanding attention in North Texas because each gives promise of affecting a major extension to an established oil area or contributing a deeper pay level. The proving of additional acreage was in prospect for the K-M-A field, and the Browning-Halsell district, western Clay County.

L. T. Burns and Consolidated Oil Company's G. W. Scaling 1, SEc of HT&B Section 6, A-879, western Clay County semi-wildcat, promises to extend the Browning pool 1¾ miles to the northwest. Oil sand was logged at 4439-44 feet and 4448-64 feet, with a 4-foot shale break between the two zones. The well was carried to 4545 feet before landing 7-inch at 4440 feet for a production test. A formation tester used at 4439-64 feet yielded a small amount of free oil with rotary mud. Scaling 1 was considered 55 feet low on the 3518-25-foot sand marker, but the first oil saturation in the Strawn checked only 30 feet lower than L. T. Burns et al's Browning 1, which opened this portion of the county for deep oil development last March, flowing at rate of 1248 barrels initial at 4432-61 feet.

Shell Oil Company's Davis 1, south offset to Browning 1, is considered a failure at 5100 feet, as prolonged swabbing yielded only a small show of oil. Pipe was cemented at 4923 feet. Frabor-Hodges Corporation et al's Kinder 1, NEc Lot 11, Block 2, 6 miles southwest of Halsell, was drilling at 1850 feet. Sinclair Prairie Oil Company purchased half interest in the block and test.

The productive limits of the K-M-A field gained a big spread when Hanlon & Buchanan, Inc.'s Fassett-Tuttle 1-F, SWc of Day Land & Cattle Company Survey, A-596, filled with oil after a 155-quart nitro shot in the lower Strawn at 4063-93 feet. Shot cavings are being removed before running tubing to try for flowing production. Top of the lime was called at 3905 feet. This well is 1½ miles east of nearest production in the northeast portion of the field, and is one of the deepest oil wells.

North Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County (K-M-A)—		
W. H. Hammon-Hanlon & Buchanan, Ferguson 2, blk 14	720	3870
Staley-Cline et al, Mangold 1-A, blk 29	544	3868
Archer County—		
Burns et al, Andrews 3, sec 27	5	1101
Archer County (Wildcat)—		
Johnson et al, C. Threet 1, sec 107	*	1102
British-American, Wilson 1, sec 12	888	4739
Clay County—		
Cooper et al, Duncan 1, blk 16	42	1214
Perkins & Cullum, Taylor 3, blk 36	*	281
Schram et al, Sommers 4, blk 1	2	190
Clay County (Wildcat)—		
Sussex Oil Corp., Glasgow 1, blk 35	*	1404
Cooke County—		
Pols & Schulz, T. H. Sears 1-a	*	1108
Thompson et al, Weisman 3	50	908
Vogel et al, Andress 5	5	884
Whitfield-Pearson & Grimes, Voth 7	432	1758
Cooke County (Walnut Bend)—		
Sinclair Prairie, Best 9	1356	4984
Haskell County (Wildcat)—		
Amerada, Kleiner 1	*	5607
Jack County—		
Grace & Barrow, Bloodworth 4	*	332
Montague County—		
Yeargin et al, Bouldin 5	10	810
Wichita County (K-M-A)—		
Bolin et al, Preston 4, sec 20	1200	4005
Buffalo Oil Co., Ferguson 5, blk 9	1080	3807
Consolidated Oil Co., Barnes 2-A, sec 9	1320	4003
Hamilton & Worsham, Martin 4, sec 12	1080	3776
King Oil Co., Mitchell 4, blk 25	*	4122
Ven - Mex Oil Co., Big Wichita River 3-A	1080	3795
Wichita County—		
Golding Est. & Cochran, Jennings 3, sec 12	10	1810
R. S. Rathke et al, E. H. Rathke 1, sec 1	2	351
Wise County (Wildcat)—		
R. Layton et al, Morrow 2	*	593
Young County—		
Hamilton et al, Hennig 1, sec 65	*	1201
Pitzer-West & Tide Water, Graham 1, sec 613	1755	3885
Trentman Co., Morrison 1, sec 646	544	3956
Underwood Drl. Co. et al, Campbell 41-C, sec 1483	*	932

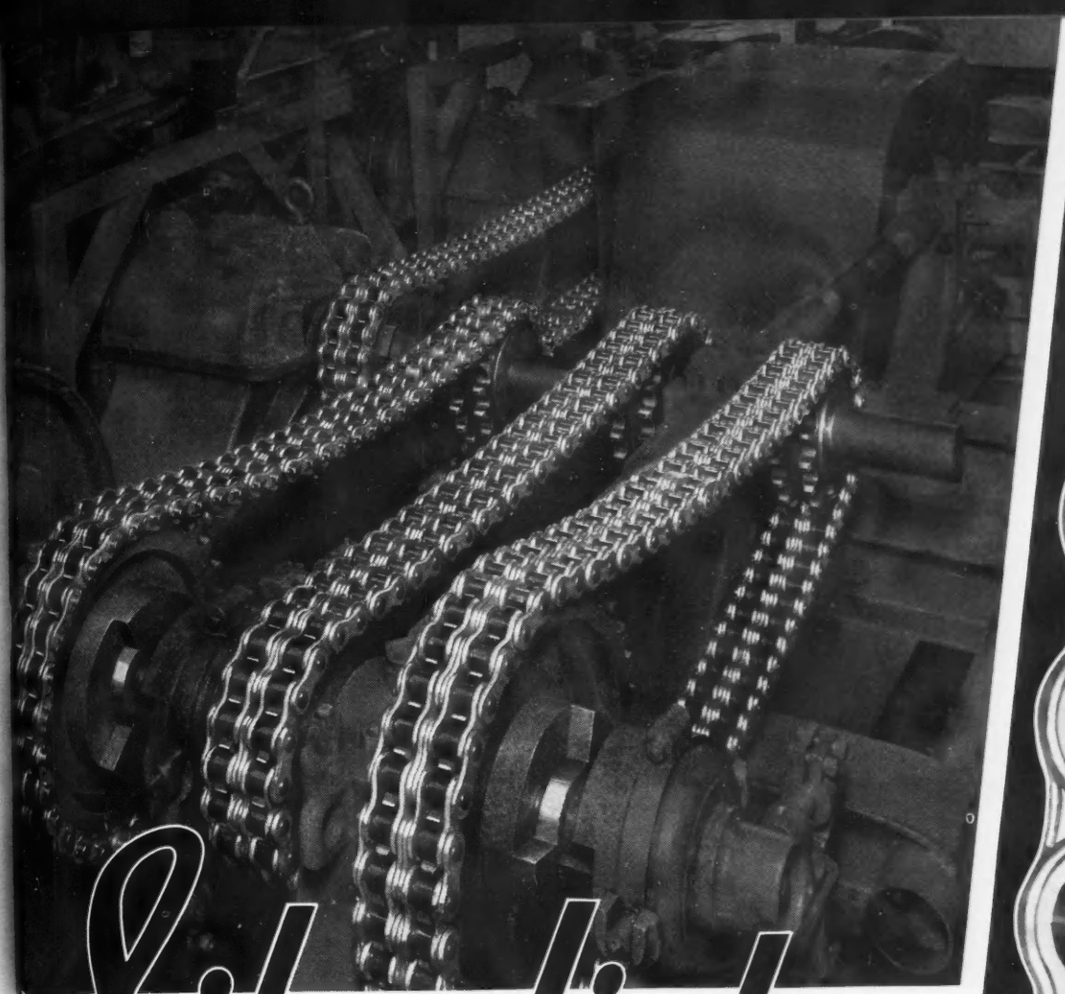
* Failures; † Junked; ¶ Million cu. ft. gas.

Finds Ellenberger Dry

Rogers & Rogers' C. W. Astley 1, north offset to their Strawn horizon discovery at Nocona, Montague County, logged top of the Ellenberger at 5390 feet, and was drilling at 5470 feet. This potential producing horizon proved hard and dry. The Simpson sand and sandy-lime zone ordinarily found above the Ellenberger in this district was absent, although a 3-foot sand section, showing oil saturation, was logged near the 5250-foot level. Astley 1 will plug back to complete in the discovery pay at 4650-64 feet if the Ellenberger fails to produce oil or gas. Stanolind Oil & Gas Company's Zachary 1, west offset to the Nocona producer, tested salt water in sand, carrying oil saturation at 3799-3850 feet, and was drilling at 3880 feet. Bridwell Oil Company's Reynolds 1, SWc Section 9, mile northeast of the town, recovered dry sand in core pulled at 4592-4611 feet, and was drilling at 4625 feet. It is below the top of the oil pay logged by Rogers & Rogers' two wells. Reynolds 1 logged top of the Canyon at 1748 feet, or about 110 feet lower than the discovery.

In Grayson County, Sinclair Prairie Oil Company's Williams 1, 2 miles south by west of Collinsville, passed up several horizons that registered nominal oil saturation, and yielded salt water when a formation tester was used at 3773-3920 feet. The test was drilling at 3990 feet, according to late reports.

Sinclair Prairie Oil Company's J. M. Best 10, south outpost for the Walnut Bend pool, Cooke County, logged top of Simpson at 5230 feet. No shows were reported in coring to 5270 feet. This test will be carried to the Ellenberger. The company's Putman 1, failure on the northwest edge of production, found the Simpson at 5209 feet, or 7 feet



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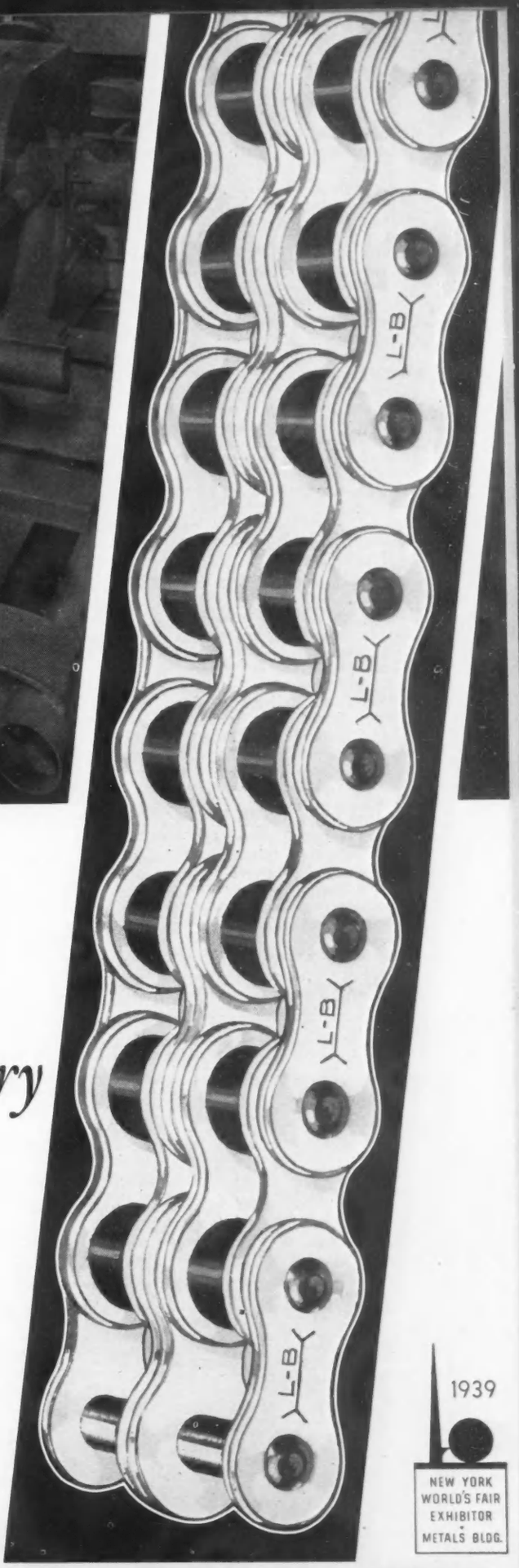

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higher than Best 10, and recorded oil saturation at 5378-93 feet and 5443-48 feet, with water in Ellenberger at 5449-6055 feet. Best 10 showed for a producer in the regular Strawn pay at 4926-65 feet, and registered an oil show in lower sand at 5105-27 feet. Cox & Hamon et al's K. Neu 1, east outpost, is making a production test of the lower Strawn at 5027-5133 feet, with pipe landed at 5100 feet.

British-American Oil Producing Company's T. B. Wilson 1, recent Bend lime discovery in northwest Archer County, increased its oil yield after using 3500 gallons of acid to 300 barrels in 8 hours, but quit flowing. Production is from gun-perforations at 4660-80 feet, with the hole bottomed at 4739 feet. The North Texas Geological Society's nomenclature committee has designated the area as the Mankins deep pool.

New Shallow Pool

E. P. Griffith et al's W. T. Waggoner 1-A, near SE SE NE H&TC Section 3, Block 4, northwest Archer County, established a new shallow area near Diversion Lake in registering an initial pumping gauge of 40 barrels of oil and 60 barrels of water from sand at 1664-79 feet. This well was drilled to 4803 feet, having failed to produce in the 4400-foot Strawn lime, and plugged back to 1679 feet before running the oil string. Deep Oil Development Company acquired controlling interest in Griffin et al's deep discovery and adjacent acreage, and is starting two 4500-foot tests.

Tex-Tor Oil Corporation and Jerome McLester's J. F. Knight 1-C, near the southeast flank of the Knight deep area, Young County, gauged 583 barrels of oil in 5 hours, with gas volume rated at 4,000,000 feet daily, from lime at 3739-44 feet.

East Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
Arkansas F. O. Co., Beall 14 (79.47-ac)	3500	3773
McCutchin et al, Jarvis 10 (85.8-ac)	600	3737
Cook Drl. Co., Cox 7 (18-ac)	1500	3703
Hunt Oil Co., Fair 22-B (138½-ac)	7000	3683
Kilgore Area—		
Christian et al, Fee 2	1500	3697
Atlantic-Gen. American, Hagler 1-B (3.8-ac)	5000	3576
Cities Service, Muckelroy 10 (36.95-ac)	4500	3602
Stodel Oil Co., D. Smith 10 (25.03-ac)	2400	3572
Longview Area—		
Cox & Hamon, Rodden 18 (110-ac)	7200	3610
Magnolia, Ziegler 25 (114.73-ac)	5400	3452
Stanolind-Tide Water, Key 19 (90.6-ac)	5600	3655
Anderson County (Long Lake)—		
Carter-Gragg Oil Co., McGaughey-Tidal 1	150	5222
Henderson County (Flag Lake)—		
L. T. Davis et al, Tarkington 2	*	3028
Hill County (Wildcat)—		
Sykes & Brannon, Weatherby 1	*	2557
Houston County (Navarro Crossing)—		
Humble, N. H. Rhea 1	¶4.3	5901
Hinchliffe & Smith, Gilmore-Sun 1	68	5891
Kaufman County (Wildcat)—		
Valentine & DeArman, Bauman 1	*	3020
Leon County (Wildcat)—		
J. K. Hughes Oil Co., Pearlstone 1	*	5566
Navarro County (Wildcat)—		
Strong et al, Estes 1	*	1355
Smith County (Wildcat)—		
Grant et al, Thweatt 1	*	4508
Titus County (Talco)—		
Humble, C. W. Graf 4 (74.15-ac)	318	4325
Panola County (Wildcat)—		
Turner & Smith, J. W. Bird 1, George Gallaspie sur	¶40	4997

* Failures; † Junked; ¶ Million cu. ft. gas.

East Texas Fields

Sharp decline in bottom hole pressure indicated

Kilgore.—Preliminary figures on the north end bottom hole pressure survey of East Texas field point to another sharp decline during May. Several companies that have a large share of the key wells used by engineers of the Railroad Commission each month report a substantial recession of the reservoir pressure. The decline of about 15 pounds recorded at the close of April when the field was permitted to produce on a 6-day schedule was generally expected to be followed by a nominal drop. It is characteristic of the field to maintain fairly constant pressure for several months after recording a sharp slump.

The drilling of inside locations is currently at the highest level reached since mid-February, with 26 operations listed, including 15 active rigs. Field work is evenly divided between independents and maiors. Seven additional wells were listed by the commission as being depleted and plugged the past week. Elimination of dormant wells is progressing at sufficient rate to offset new completions and hold the total accounted for producers below the peak level of 26,022 attained about March 1, 1939.

Panola County wildcat makes 40 million wet gas

Shreveport.—Turner and Smith's J. W. Bird 1, George Gallaspie Survey, 8 miles northeast of Carthage, Panola County, Texas, and 4 miles northeast of Glen Rose gas-distillate wells completed several months ago, was completed May 28 making estimated 40 million cubic feet of wet gas daily from the Glen Rose lime at 4997 feet; elevation was 279 feet and base of massive anhydrite was logged at 4870 feet. Seven-inch casing was set on bottom at 4985 feet and a 12-foot core cut that showed gas and distillate. The well was then tested and came in as a wet gasser. It previously had blown out before casing was set and had been killed successfully. The new gas well is between the Glen Rose gas-distillate wells 4 miles to the southwest and the old Bethany field, also in Panola County.

Opelika gas-distillate field extensions loom

Tyler.—Expansion of the Opelika gas-distillate area, Henderson County, to the southwest and northwest is in prospect for the two major outposts being drilled by Tide Water Associated Oil Company and two associated companies. Both tests entered the Georgetown lime at levels that are considered favorable for production in the Lower Trinity and in all probabilities not sufficiently down dip to reach oil on the flanks of the large structure.

The partnership's Lewis 1, 4000 feet northwest of production, logged top of Georgetown at 5525 feet, with an elevation of 431 feet, and was drilling at 5410 feet. Scott 1, situated 2½ miles southwest of production, was drilling lime at 6090 feet, having entered the Georgetown at 5281 feet, with an elevation of 538 feet.

Richards & Holloway, Incorporated's Murphy-Humble 1, southwest offset to the discovery pumper in the Mabank area, northwestern Henderson County, flowed 62 barrels of oil in 4 hours through ½-inch tubing choke from Woodbine sand at 3151-56 feet. The original well is reported to be making 65 barrels daily, besides a large volume of water.

South Texas Completions

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Brooks County—		
Humble's McGill 10 (Kelsey)	500	4734
McGill 11 (Kelsey)	500	4732
Calhoun County—		
Gulf's Williams 4 (Keyser)	400	5484
Tex-O-Cal Oil Co.'s Brundrett 1 (WC) lot 294 Brundrett sur	*	3325
DeWitt County—		
Scokey-Nick's Steinmann 1 (WC) Uriah Blue sur	*	2505
Jackson County—		
Housh & Thompson's Broughton 1 (Francitas)	500	8010
Jim Wells County—		
Walton & Wicker's Bankers Mortgage Co. 1 (East Alice)	650	5344
Kenedy County—		
Humble's Kenedy Ranch 2 (WC) Penascal Gr and in 144,316-ac tr	*	7818
Live Oak County—		
Loma's Church 1 (Oakville)	*	2855
Nueces County—		
Seaboard's La Prelle 1 (WC) North Luby area	350	7440
Southern Minerals' King 1-B (Richard King)	200	5419
Refugio County—		
Coronado's Spaulding 7 (La Rosa)	600	6350
Spaulding 8 (La Rosa)	600	6842
Hewit & Dougherty's Posert 1 (La Rosa)	36	6365
San Patricio County—		
Bay-Tex' Mills & Brown 2 (McCampbell)	1100	7155
Grote & Corgey's Scrivner 1-B (McCampbell)	1100	7150
Smallshaw 1 (McCampbell)	1100	7150
Humble's Speer-Fee B-1 (East White Point)	600	5668
Landrum-Jones' Brown 2 (McCampbell)	1000	7154
Plymouth's Cole 1-E, (East White Point)	500	5672
Plymouth's Solar-Countiss 2 (East White Point)	500	5673
Sinclair Prairie's Womack 6 (East White Point)	500	5675
Victoria County—		
Barnsdall's McFaddin 28 (McFaddin)	450	4410
Gulf's Bonner 7 (Heyser)	*	6060
Traylor B-11 (Heyser)	¶1½	5620
Houston's Fagan 1 (WC), McFaddin area	*	2232
Transwestern's McFaddin E-13 (McFaddin)	300	4413

SAN ANTONIO DISTRICT

Bastrop County—		
Coffield's Lytton 3 (North Cedar Creek)	*	1625
Deskin's Rivers 1 (WC), E. Standifer sur	*	2135
Hughes' Lentz 1 (WC), Freeman Wilkinson sur No. 21	80	2460
Bexar County—		
Dickson's Dickson 1, (WC), F. Villareal sur	*	lcn.
Skaggs' Brauback 1 (WC), Fernando Rodriguez sur	*	373
Caldwell County—		
Fuch's Chamberlain 1 (WC), Burleson sur	*	834
Ogden's Moore 4 (North Dale)	68	2305
Kerr County—		
Meteor's Whitworth 1 (WC), HE&WT sur 1439	*	940
Starcke's Saul 1-A (WC), TW&NE sur 47	*	310
Maverick County—		
Boicourt's Bandera County 1 (WC), sur 231	*	320
Medina County—		
Bain's Pike 1 (Chicon Lake)	*	463
Schleicher County—		
Lone Star's Bert Page 2 (WC), Cooper Page area	*	5795
Travis County—		
Barnes' Swenson 1 (WC), Kimbro area	*	786
Grimes' Pearson 2 (Kimbro)	*	865

* Failures; † Junked; ¶ Million cu. ft. gas.

Southwest Texas Fields

High pressure sand near Orange Grove to be tested. Ben Bolt discovery well rated at 145 barrels daily.

Corpus Christi.—Jim Wells County continues its discovery pace with preparations being made to test a well three miles northwest of Orange Grove. The operation is J. R. Hunter and W. R. Quinn's M. & F. Pundt 1, which cored a high pressure sand at 4738-45 feet. It had been drilled to an unannounced depth below this zone. An electric survey was run and casing set.

The well, located in a 141.7-acre tract in J. Poitevent Survey No. 1, ran a drill-stem test at 4737-70 feet and recovered a good gas blow with 950 pounds pressure in 4½ minutes. Closed in bottom hole pressure was 2000 pounds. The block was assembled by W. Earl Rowe, spreads sold, and the deal turned for drilling the test.

New Sand Indicated

H. H. Howell may be opening a new sand deep in the Yegua zone in his well 2000 feet north and west of the Camada field discovery, also in Jim Wells County. The well is W. K. Hoffman 1, which was carried to its 7000-foot contract before an electric log was taken. A sand section at 6860-75 feet was indicated and side wall samples were taken.

Potential test on Bridwell Oil Company's discovery of the Ben Bolt field in Jim Wells County rates the well at 144.9 barrels of pipe line oil per day through ⅛-inch choke, with 875 pounds tubing and 1000 pounds casing pressure. The producing zone was cored at 5231-51 feet in the Vicksburg zone, but production is from perforations at 5242½-46½ feet. Offsets have been commenced to the east and north.

In Nueces County, two offsets have been staked to the discovery producer of North Clara Driscoll field. Texas Conservative Oil Company's Minnie Bock 1, SE SE Section 55 and 5½ miles southwest of Robstown, flowed 100 barrels of pipe line oil per day through ⅛-inch choke under pressures of 1230 pounds on tubing and 1575 pounds on casing. The hole is bottomed at 4051 feet, where casing was landed. It was perforated at 3806-14 feet; oil sand in the Catahoula was found at 3805-35 feet.

South of South Clara Driscoll area, R. R. Ogden still is finding salt water in Josephine Miller 3, Section 112. Last test was made at 5795-5810 feet.

New Field Looms

Seaboard Oil Corporation of Delaware continues wildcatting with success, apparently having discovered another producer on a geophysical prospect. A. Persons 1, Section 29, 5 miles east of Mathis, drilled to 6348 feet, plugged back and set casing at 5675 feet. Its main objective will be the sand between 5602-26 feet, where the well showed considerable oil and some pressure on drill-stem test. The San Patricio County wildcat also found other sands with producing possibilities.

Quintana Petroleum Corporation et al are attempting to widen Tomoconnor production in Refugio County to the east. Maude Williams A-10, 11,700 feet east of the nearest production in the field, was carried to near 6500 feet and casing set. It was testing through perforations in the 5800-5900-foot level at last reports. The company has one other active east outpost to the field and locations for two additional wells. These tests are being drilled as closed operations; hence, information is lacking.

Attempting Extension

Jackson County's West Ranch production was being spread 1320 feet farther to the west with Magnolia Petroleum Company completing A-11 West. The well, bottomed at 5160 feet, is testing through perforations at 5145-54 feet. It has not flowed consistently, possibly due to lack of adequate perforations. About 2 miles north of the field, Lonnie Glasscock should be to the 5100-foot sand by the beginning of the week in Drummond 1.

Wildcat near Barbacoas to test sand that blew out

Mission.—Magnolia Petroleum Company again has plugged back M. M. Garcia 1, 2 miles northeast of Barbacoas field of Starr County, and will attempt a production test in a high pressure sand at 6084-94 feet, where the well blew out recently. This test, in Porcion 90, had been drilled to 6567 feet, landed casing at 6465 feet, and made tests of the open hole, recovering some mud with a little gas blow.

The well is one of the most important deep wildcats thus far drilled in this sector of the Rio Grande Valley, where a majority of the deep tests have been unsuccessfully completed, due to high gas pressure.

Magnolia Petroleum Company apparently plans a deep test in Leroy G. Denman 2, just west of Palo Blanco field in Brooks County. A string of 13⅜-inch casing was set at 1964 feet and the well is going ahead. The com-

LAREDO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Duval County—		
Argo's Benavides 1 (WC), sur 238..	*	5605
Belcher's Mew 2 (Fitzsimmons)....	450	4295
Cox & Hamon & Gorman-Yoakam's Cuellar 16 (Hoffman)	120	2847
Dutex' State 9 (Piedre Lumbre)..	350	2114
Gravis' Schallert 3-A (WC), Palangana area	*	3168
Hiawatha's Miller 8 (Longhorn)...	500	4909
Southland 13 (WC), North Sweden	350	4757
Longhorn's Miller 8 (Longhorn)...	500	4909
Magnolia's DCRC 8 (189) (Cedro Hill)	73	1466
25 (201) (Eagle Hill)	433	2129
Well 35 (Hoffman)	25	2823
Miller's Miller 8 (Longhorn).....	450	4053
Proctor's Fredericks 1 (WC), J. H. Gibson sur	*	1092
Jim Hogg County —		
Humble's Atwood 2 (Colorado) ...	350	3050
Starr County—		
Whitfield & Southers' Bennett & Carruth 1 (WC), tr 182, por 90..	*	3012
Zimmerman's Wood 3 (Rickaby) ..	125	1795
Webb County—		
Johnson's Adami 1 (WC), sur 345..	35	995
Killam's Garcia 2 (Killam)	20	2649
Navarro's Benavides 2 (WC), blk 11, section 1	*	3510
Schimmel's Laurel 3 (North Killam)	58	2088
Smith & Story, Inc.'s Houston Oil 1 (WC), Laurel area	*	2477
Zapata County—		
Buffalo's Hinnant 8-C (Mirando Valley)	198	1992
Interstate's Lopez 1-A, (South Mirando Valley)	¶10	2228

* Failures; † Junked; ¶ Million cu. ft. gas.

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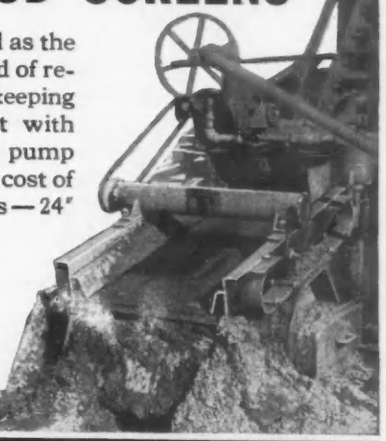

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pany also is to drill a deep test on the Yzaguirre land in the Ramirez Grant, 4½ miles southeast of Agua Nueva, Jim Hogg County.

Bastrop County test gets sulphur water and quits

San Antonio.—After developing sulphur water in the Edwards limestone, Marts and Beavens, Incorporated's R. E. Chiles 1, McLaughlin Survey, 2½ miles north of Sayersville in Bastrop County, was abandoned. The well topped Georgetown limestone at 3096 feet and at 3221 feet made a test. It was thought that this was the top of the Edwards formation and casing was landed at 3217 feet.

Cole sand found productive northeast of S.R.C. field

Laredo.—Cole sand production has been established 2000 feet northeast of the S.R.C. field of Duval County by Transwestern Oil Company with completion of Duval County Ranch Company 21, near NWc Section 297. The well found the sand at 1045-54 feet and pumped 33 barrels of crude in 10 hours. The company has three new locations in the immediate area.

White Creek field, Live Oak County, put its second oil well on production. It is Coquat et al's Bonham 1, north offset to the original producer. The well drilled to 1740 feet, plugged back, and was perforated with 40 shots between 1400-12 feet. Fluid rose 750 feet in the hole, and on pump the well made 75 barrels of clean oil per day.

Texas Gulf Coast

Dickinson outpost shows oil and continues coring. Oil sands cored in wildcat on North Cheek prospect.

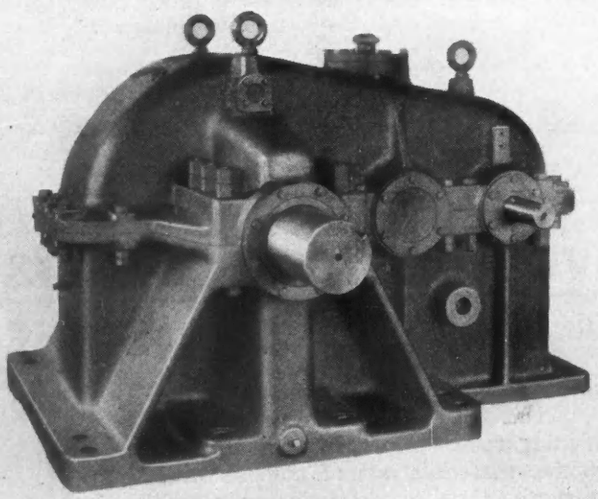
Houston.—Pure Oil Company's Franz Kohfeldt 1, two miles south and east of Dickinson field, Galveston County, is below 8479 feet and preparing to core ahead after logging a sand and sandy shale formation from 8461 to 8479 feet with a show of oil and gas. No salt water has been reported in the outpost, said to be about 300 feet lower than wells at Dickinson but on the downthrow side of a fault. If the well logs oil sands deep it will probably open a new producing district in the Dickinson area.

Hebert & Smith and George Echol's Fontenot 1, North Cheek area, H&TB Survey 187, attracted considerable attention last week when oil sand was cored at 6673 to 6681 feet. This Jefferson County wildcat was drilled deeper and logged salt water sands below the oil show. At the end of the week the hole was down to 7070 feet and an electrical log was being run. Cores taken at 6681 to 6684 feet consisted of sand with an oil odor in top and salt water in bottom; those taken at 6684 to 6694 feet were 100 percent salt water sand as were those from 6735 to 6737 feet.

Northwest of Sandy Point, Brazoria County, Hamman Exploration Company is preparing to make another test on Darrington State Prison Farms 1, A. McFarland Survey, which last week was perforated in the Vicksburg formation at 8350 to 8380 feet. On a drill-stem test, made with packer set at 8298 feet, the well flowed 12 barrels of 37.6-gravity oil per hour on a 10½-hour test through ¼-inch choke. Tubing pressure was 1200 pounds. Perforations have been squeezed with cement. Analysis of the oil showed gasoline, 15 percent; naphtha, 10 percent; kerosene, 15 percent; gas-oil, 20 percent, and fuel oil, 40 percent.

About ¾ mile northwest of production at Magnet, Wharton County, Smith & McDannald's M. L. Marti 1, J. Castleman Survey, was flowing five barrels of oil per hour through a ⅛-inch choke with a tubing pressure of 535 pounds. The well was drilled to 5549 feet and 5½-inch casing set. It was perforated at 5537 to 5540 feet, 5541 to 5543 feet, and 5545 to 5547 feet.

About 4800 feet north of production at Withers field, Wharton County, The Texas Company was preparing to work over Pierce Estate C-59, J. Caldwell Survey, after the well came in flowing oil and salt water through a 1/5-inch choke. About 50 percent of the fluid



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Texas Gulf Coast Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Aldine—		
Texas Gulf, Hairgrove 1	*	7071
Heath 1	*	7013
Anahuac—		
Humble, Johnston X-27	450	7100
Cheek—		
Humble, Broussard Trust 4	192	7720
Eureka—		
J. Frazier, Shady Acres 3	531	8111
Fairbanks—		
Sinclair, Goodykoontz 4	90	6841
Friendswood—		
Humble, Kiesling & Dixon 12	612	6047
West Prod. Co. 11	593	6044
West-Fee B-12	384	6073
West-Fee B-23	584	6042
West-Fee B-32	471	6071
Hardin—		
Texas Co., Smith 3	411	7650
Hastings—		
Stanolind, Moore C-13	617	6080
Hitchcock—		
Maco Stewart, Fee 1	115	5144
Louise—		
Gulf Stream Inc., Whiteside A-6	350	5162
Magnet—		
Humble, Cockburn 13	422	5538
Moss Bluff—		
McPhail-Spear, Sherman 1	*	2225
Orange—		
Continental, Chesson 19	180	5616
Segno—		
Humble, Kirby B-X-12	192	8190
Gulf, Regan 5	604	8067
Silsbee—		
Humble, Kirby 5	432	6841
Spurger—		
Republic, Hurd Fee 20	271	7705
Thompson—		
Humble, Davis 8	96	5390
H. N. Naylor, Musselman 2	960	7782
Tomball—		
Humble, Petrich 5	264	5563
Withers—		
Texas Co., Broussard 10	91	5546
Thompson A-12	119	5542
Madison County—		
Mugford & Camsey, Andrews 1, nw of Madisonville, S. S. Cole sur.	*	2018
Orange County—		
N. W. Hunter, Miller-Vidor Lbr. Co. 1, Vidor area, J. M. Swisher sur	*	7011

* Failures; † Junked; ¶ Million cu. ft. gas.

was water. The extension was drilled to 5623 feet and 5½-inch casing set. It was perforated at 5542 to 5546 feet with 32 shots. Tubing pressure on the well was 260 pounds and casing pressure was 490 pounds.

Aldine Outpost Fails

About 5000 feet northeast of production at Aldine, Harris County, Texas Gulf Producing Company abandoned another well. Heath 1, W. C. R. R. No. 2, drilled to 7013 feet, cored broken sands with a trace of salt water at 6745 to 6760 feet, 6914 to 6915 feet and from 6939 to 6943 feet. The first failure for the new field after the discovery well came in was O. P. Hairgrove 1, 1500 feet southwest of the discovery well. It was plugged at 7071 feet after coring sand with a slight show at 6670 feet. The discovery well for the field, completed at 6824 feet, is still flowing pipe line oil. Aldine has been defined south, southwest, north and northeast.

North of Sheppard, San Jacinto County, Jack Frazier and Sinclair Prairie Oil Company's A. Smith 1, J. Martinez Survey 10, was drilling in shale at 7475 feet after logging salt water sands in Wilcox at 7452 to 7466 feet. Salt water sands were cored up the hole in the Cockfield formation also.

At Ace, Polk County, Patrick & Tyrell Drilling Company's Kirby & West 1, west offset to Shell Oil Company's Doucette 1, P. A. Sublett Survey, third well to be drilled to the Wilcox formation, was coring in shale at 7783 feet. Cores at 7710 to 7778 feet consisted of sandy shale with no shows; those from 7778 to 7783 feet held one foot of sand showing oil. The Wilcox producing sand is found around 7742 feet.

On the Collegeport prospect in Matagorda County, Continental Oil Company's Sagage 1, D. Yeamans Survey, was drilling at 4123 feet at the close of the week. This wildcat blew out at 3845 feet and was killed. Cores taken at 3845 to 3850 feet revealed sandy shale with no shows of oil.

Six miles southwest of Madisonville, Madison County, R. L. Peveto et al were plugging back from 5015 feet to test shallow sands in E. P. McWhorter 1, Boatright League. The wildcat had sands showing oil at 1158 to 1180 feet.

N. W. Hunter's Miller-Vidor Lumber Company 1, Vidor prospect, Orange County, was abandoned last week at 7011 feet in shale after coring solid salt water sands at 6175 to 6285 feet.

On the north flank of Thompson field, Ft. Bend County, H. M. Naylor completed his second well in the deep sand. Musselman 2, 660 feet west of Musselman 1, H. Chriesman Survey, flowed 40 barrels of pipe line oil per hour through a quarter-inch choke with a tubing pressure of 1800 pounds. The well was completed at 7782 feet.

Twenty-acre spacing sought for Thompson

Wells in the North Thompson field, Fort Bend County, would be placed in the center of 20-acre units and prorated solely on an acreage basis, according to a plan submitted last week to the Texas Railroad Commission. H. M. Naylor, owner of the discovery well, presented the plan which was endorsed by Gulf Oil Corporation and Humble Oil & Refining Company, only other operators represented.

Naylor requested an allowable of 350 barrels daily per well until production in the pool reaches 10,000 barrels. He pointed out that the Texas statute provides that allowables in new fields may not be reduced until the field is producing 10,000 barrels daily, save for the prevention of physical waste.

Naylor said he had 2000 acres under lease and felt sure that the field did not extend into the old Thompson field which it adjoins. The pointed out that the Gulf drilled a hole 8300 feet deep and about 1500 feet south of his Musselman 1, the discovery well in North Thompson. The latter well is 7800 feet deep and produces from the Vicksburg.

The Gulf well, Naylor said, failed to produce at all, despite the fact that it was some 500 feet deeper. He expressed the opinion that the Vicksburg probably did not extend under Thompson. Engineers for the Gulf and Humble, however, pointed out that the Vicksburg sand is very lenticular and that some lenses which may prove productive might well be found under the old field.

The new well is producing 37 gravity oil from a sand which Naylor says is 100 feet thick. It produced 44 barrels per hour through a ¼-inch choke and is now producing with a gas/oil ration of 506/1.

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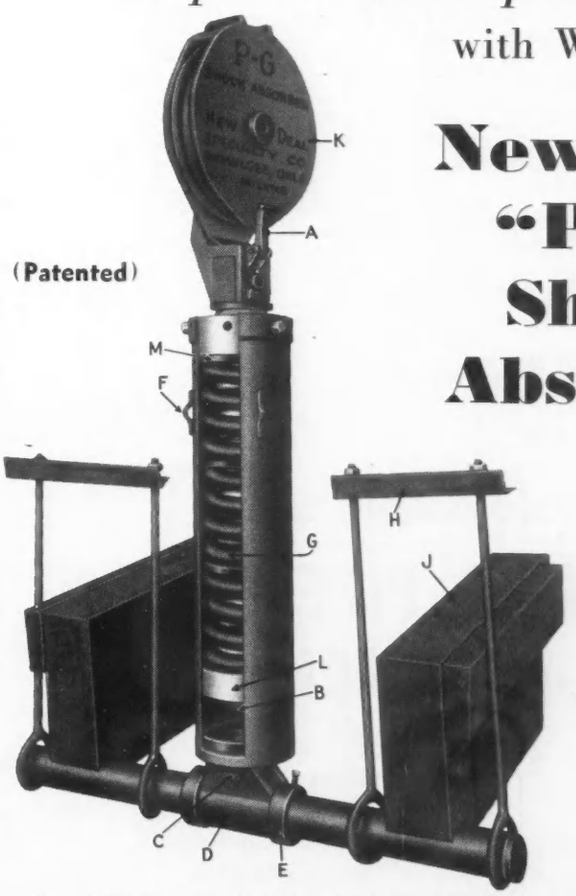

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South Louisiana

La Pice prospect test yields gas and distillate.
New distillate sand affords extension for Gibson.

Lake Charles.—Shell Oil Company is completing Mrs. Henry Schexneyder 1, La Pice prospect, St. James Parish, at 10,910 to 10,915 feet. A 5-minute drill-stem test through ¼-inch chokes showed a 510-pound pressure and 4 gallons of distillate. Tubing was run and the well came in flowing two barrels of 45.6-gravity distillate per hour and 3,000,000 cubic feet of gas daily through a 10/64-inch choke. Tubing pressure was 4600 pounds and casing was sealed. This wildcat which opened the second producing area for St. James Parish, originally had been drilled to 11,314 feet.

Gibson field, Terrebonne Parish, was extended south last week when Shell Oil Company's Kuntz 3 logged a new sand. After drilling below 9000 feet the well was plugged back and perforated at 8639 to 8642 feet and came in flowing 1½ barrels of distillate daily through a ⅛-inch choke with a tubing pressure of 3000 pounds and a casing pressure of 3100 pounds.

At South Houma, Terrebonne Parish, Shell Oil Company's Peters was drilling in sand at 9800 feet with an odor of oil, topped at 9782 feet. The discovery well was completed in oil sands at 10,300 to 10,310 feet.

Superior Oil Company is preparing to make a test on State 6 at Creole, offshore the of Cameron Parish and in the Gulf of Mexico. The well is being tested in oil sands at 6754 to 6782 feet, where a previous test showed only gas. If this well produces oil it will be the first oil well from the sand. State 6, first drilled to 7200 feet, was plugged back and sidetracked at 1175 feet. It was drilled to 6794 feet where 5½-inch casing was set.

Woodlawn Extension

Northwest of production at Woodlawn, Jefferson Davis Parish, Union Sulphur Company has completed Miller 2 as a gas well. After drilling to 9455 feet and setting five-inch casing at that depth the well was perforated with 59 shots from 9376 to 9393 feet. It came in making dry gas with a 3400-pound pressure.

North of production at Abbeville, Vermilion Parish, Continental Oil Company's Duhon 1 was drilling ahead below 10,480 feet at the end of the week after coring three good sands. It is understood that royalty is selling at $600 per acre base in the area of the well.

Humble Oil & Refining Company is preparing to make another test on Sweet Lake Land Company 2 at Chalkley field, Cameron Parish. Last week the well was perforated with 21 shots from 8520 to 8527 feet and it made salt water. Oil sands were cored at 8480 to 8490 feet and 7-inch casing set at 8608 feet. Shell Oil Company will test a new sand at Chalkley in Hanszen 1, which will be perforated at 9038 to 9041 feet.

Testing at St. Gabriel

On St. Gabriel prospect in Iberville Parish, Shell Oil Company's Natalbany Lumber Company 1 was being tested at the end of the week. Last week casing was perforated at 9040 to 9045 feet with 17 shots and from 9050 to 9053 feet with 12 shots. The hole was swabbed down to 5300 feet and recovery was 2 percent oil; 2 percent basic sediment and water and 96 percent salt water. The perforations were squeezed and the hole was perforated at 9042 to 9047 feet. On a 3-hour drill-stem test no gas was shown.

Bel Oil Company is preparing to make another test on Bel Estate 1 at North Elton, Allen Parish. Last week the wildcat was perforated with 20 shots from 6025 to 6036 feet and on a 13-minute drill-stem test the well made gas through quarter-inch chokes. The pressure was 550 pounds. The crew recovered 1 joint of sand with a trace of distillate, 3 stands of mud and water, 1 single of sand with odor of gas. Bottom hole pressure was 2800 pounds. Perforations were squeezed for another test.

The Texas Company is fishing on Continental Land & Fur Company 1, at Terrebonne Parish, at 9580 feet after making a test at 9550-58 feet and getting salt water. This wildcat was drilled to 12,483 feet some time ago and was abandoned. Screen and liner is being cut and pulled at 9283 feet. It is rumored that the well has a large sand section at 8200 feet which might produce oil if tested.

Fails on Test

Union Sulphur Company's Tietje 1, southwest of China, Jefferson Davis Parish, failed to flow oil on a production test last week. After setting seven-

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ELMAX CONSTRUCTION CO., INC.

Harvey, Louisiana

(Across the river from New Orleans)

South Louisiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Bancroft—		
Republic, Columbia Land & Timber Co. 8	300	7336
Baton Rouge—		
Lisbon-Iberia Oil Co., Duplantier A-1	438	6474
East Hackberry—		
O'Meara Brothers, Jones 1	*	275
Garden Island—		
Texas Co., State 29 (wo)	90	6903
Gibson—		
Shell, Kuntz 3	36	8667
Raceland—		
Amerada, South Coast 4	504	10,199
Roanoke—		
Humble, Devilbiss 6	*	4925
Villa Platte—		
Continental, F. Tate 3	271	9057
St. Martin Parish—		
Roper & Todd, Levert 1, Pine Alley prospect, 42-10s-7e	*	9029

* Failures; † Junked; ¶ Million cu. ft. gas.

inch casing at 8232 feet the wildcat was perforated with 39 holes from 8057 to 8065 feet. Salt water was swabbed. The well is reported to have cored oil sands at 8055 to 8085 feet. It will be plugged back and tested at 7945 to 7953 feet.

North of production at Eola, Avoyelles Parish, Amerada Petroleum Corporation is preparing to complete Marchive 1, which logged broken oil sands in Wilcox at 8489 feet and was still in sand at 8601 feet. Sid Richardson is preparing to complete the first well in the bayou at Eola; State Bayou Boeuf 1, cored Wilcox oil sands at 8430 to 8533 and 5½-inch casing was set at 8546 feet.

Continental Oil Company's H. Haas 3, Villa Platte, Evangeline Parish, was the third well in the field to be drilled to the Wilcox. Bottomed at 10,500 feet, it was plugged back and tests were made at 8990 feet showing salt water.

On the south flank of Roanoke, Jefferson Davis Parish, Humble Oil & Refining Company has abandoned Devilbiss 6 at 4925 feet after it failed to produce oil from a shallow sand.

In East Baton Rouge Parish, Zachary Oil Company has made location for Ratcliff 1, 220 feet southeast along the north line of section 45 from most westerly corner and 210 feet southwest at right angles in Section 45-4s-1e.

South of Venice in Plaquemines Parish, Gulf Oil Corporation has made location for State PP 8, 2425 feet east and 920 feet south of the northwest corner of Section 18-23s-31e. It is the most southerly wildcat ever drilled in South Louisiana.

Nat Hunter has made location for Burton Fee 1 in Vernon Parish. It is 330 feet north and 330 feet west of the southeast corner of Section 13-2n-5w.

Louisiana issues 34 drilling permits

Shreveport.—Thirty-four drilling permits were authorized last week by the Louisiana Conservation Commission. Ten were in North Louisiana, divided among the following parishes: Caddo, 7; Sabine, 2; and Webster, 1. The 24 in South Louisiana were in the following parishes: Acadia, 3; Avoyelles, 3; Beauregard, 2; Cameron, 1; East Baton Rouge, 2; Jefferson Davis, 1; LaFourche, 6; St. Bernard, 1; St. Landry, 3; St. Mary, 1; and Vernon, 1.

Twenty-acre spacing rule given Lewisville field

A 20-acre space rule was put into effect last week in the Lewisville field (Glen Rose pool), LaFayette County, by the Arkansas Oil and Gas Commission. The rules governing the field as promulgated by the commission also provide that the gas/oil ratio of 2000 to 1 shall be followed and that gas from wells in excess of this ratio shall be metered.

Rule XIV of this order says: "No air or gas lift artificially applied in its ordinary form shall be used. Special permission may, at the discretion of the commission, be granted for the use of special devices for lifting oil using air or gas lifts in such forms as will not be injurious to the producing formation." Permit in writing must be secured to use such devices.

North Louisiana Fields

Two failures reduce Shreveport activity to low point.

Lake Bisteneau Lower Marine gasser still under test.

Shreveport.—Two failures, both edge tests in the northeast part of the field, and one oil well in the southeast edge of production were completed in the Shreveport basal Glen Rose lime field where only 2 rigs were running June 1, although another test awaited arrival of tubing to test. The week's producer brought to 38 the total of oil wells in the Shreveport field, discovered last July 15.

North Louisiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Bienville Parish (Lake Bisteneau)—		
Union Prod. Co., School Board 1, 16-16n-10w	¶70	5233
Caddo Parish (Vivian-Pine Island)—		
Browning & Holcomb, Browning 2, 21-22n-16w	*	2802
Adams et al, Van Horn 2, 22-22n-16w	*	2783
Caddo Parish (Shreveport)—		
Harry Fotiades, E. W. Browne Unit 1, 35-18n-14w	168	5592
Harry Hanbury et al, DeSoto Corporation 1, 26-18n-14w	*	5563
Red Iron Dr. Co., Model Gardens Unit 1, 23-18n-14w	*	5630
Webster Parish (Cotton Valley)—		
Oliphant Oil Corp., E. L. Stewart A-2, 33-21n-10w	994	8565

* Failures; † Junked; ¶ Million cu. ft. gas.

The tests abandoned were Harry Hanbury's DeSoto Corporation 1, C NW NW 26-18n-14w, abandoned at 5563 feet as a salt water hole; and Red Iron Drilling Company's Model Garden Unit 1, located 1180 feet north and 1053 feet west SEc 23-18n-14w, dry at 5630 feet. Both abandonments are in the northeast end of the field. Most of the acreage yet unproven in the Shreveport field is in the city limits except to the east of the northeast end of the field and several locations in the discovery block. The limits of production have been defined southwest, northwest and north.

Harry Hanbury's Leonard 1, NE NE 19-9n-13w, a basal Glen Rose lime (Pettet) wildcat test 5 miles northeast of production in the Shreveport field, proved disappointing failing to log any Pettet zone showing lime breaks, although it had checked 111 feet higher than average Shreveport field wells on base of massive anhydrite. The test on June 1 drilled ahead at 5802 feet in red shale. Contract depth is 6000 feet. Operators awaited arrival of tubing before testing J. Thomas Driscoll's Wool-

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PELICAN WELL TOOL & SUPPLY CO.

SHREVEPORT LOUISIANA

PELCO

Lake Charles—Houma—Converse
New Iberia—Monroe.
Cotton Valley—Greggton
Magnolia—Houston

worth 1, NE SE 19-18n-14w, 1½ miles northwest of Shreveport production. Production string of casing has been cemented. Total depth is 5608 feet.

The fifteenth oil producer from the lower Marine horizon at Cotton Valley, Webster Parish, was completed last week in Oliphant Oil Corporation's E. L. Stewart A-2, SW SW 33-21n-10w, on the southwest flank of the field gauging 994 barrels of oil in first 24 hours through ¼-inch choke with casing pressure 1700 pounds and tubing pressure 1300 pounds. Gas/oil ratio was 1197 to 1. With elevation of 247 feet this test topped Cotton Valley (lower Marine) at 8132 feet and logged "D" sand saturation from 8479-8502 feet.

Arkansas Fuel Oil Company continued to test Gayoso 2, C SW SE 14-16n-10w, lower Marine test in the Lake Bisteneau district, Bienville Parish. The test after perforating from 8110-70 feet and 8306-12 feet and acidizing, was showing estimated four million cubic feet of gas daily with a spray of wash water and distillate. It is the first time the lower Marine has been tested at Lake Bisteneau, which during the last week added its fifth wet gasser in the Glen Rose lime.

Another North Louisiana drilling operation passed the 10,000-foot mark last week. This is Union Producing Company's Walker Unit 1, C SE 30-18n-8w, Webster Parish, which on June 1 drilled hard sand and shale at 10,029 feet. Six other operations in Arkansas, North Louisiana and East Texas border counties have passed 10,000 feet. Deepest of these was R. W. Norton's Payne 1, SE SE 29-23n-16w, Caddo Parish, Rodessa field, that went to 11,486 feet before being plugged back and completed as a gasser in the 6000-foot Glen Rose horizon.

Standard Oil Company of Louisiana and Joe Modisett's Frost Lumber Company B-1, SE SE 14-23n-2w, Union Parish geophysical wildcat prospect, seeking Permian lime production, drilled shale and sand at 8454 feet.

Stanolind Oil & Gas Company let contract for its lower Marine test in Pine Island, Caddo Parish, Dillon 131, C SE NE 14-21n-15w, to Noble Brothers Drilling Company of Tulsa, who are moving in rig. Jack Lent, whose E. L. Whatley 1, SE SW 17-10n-10w, Natchitoches Parish wildcat showed 12 barrels oil and salt water daily on pumping test, in the Paluxy at 3296 feet, has derrick up for Walker 1, NW NW 9-10n-10w, another test on the same block. Continental Oil Company is ready to spud its Tensas Parish wildcat, Cammack 1, 1690 feet south and 330 feet west NEc 31-13n-12e.

Arkansas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Columbia County (Magnolia)—		
Lion O. R. Co., Crisp-Glasgow 1, 23-17-20	300	7659
Crisp-Glasgow 2, 23-17-20	350	7649
Shell, Glasgow 1, 23-17-20	812	7665
G. H. Vaughn, D. B. Baker Unit 1, 14-17-20	504	7610
Columbia County (Wildcat) —		
Phillips, Askew Unit 1, 4-17-21	*	8510
La Fayette County (Buckner)—		
Standard, Waters 2, 7-16-22	480	7254
Union County (Wildcat)—		
Oliphant Oil Corp., Union Sawmill Co. 1, 22-19-14	*	7950
Union County (Schuler)—		
Lion O. R. Co., First National 2, 13-18-18	244	7695

* Failures; † Junked; ¶ Million cu. ft. gas.

Arkansas Fields

Lower Marine's yield at Schuler 7,524,276 barrels

El Dorado, Ark.—The Jones (lower Marine) sand at Schuler, Union County, Arkansas, between discovery September 17, 1937, and May 12, 1939, produced 7,524,276 barrels of 34 gravity crude and 6,879,215 m.c.f. of gas, according to data compiled by the Arkansas Oil and Gas Commission. This anticline structure on May 12, 1939, had 129 producing wells with an average depth sub-sea of 7300 feet with an average sand thickness of 50 feet.

Original bottom hole pressure of 3520 pounds had dropped to 2591 pounds May 12, 1939, a change of 929 pounds. Total acres are 3900 and allotted acres 2640. The daily pressure change between April 12 and May 12, this year, was 0.9 pound as compared to minus 1.32 pounds the preceding 30 days and 1.60 pounds the 30 days immediately preceding that. Actual gas/oil ratio on May 12 was 1118 as compared to 1039 one month earlier.

Reynolds B.h.p. Decline

Reynolds (Permian) lime pool of Schuler has 16 wells and was discovered August 11, 1938. Its average sub-sea depth is 7350 feet and average lime thickness is 30 feet. It has a total of 1245 acres with 666 allotted acres. Its bottom hole pressure has declined from date of discovery to May 12 this year from an original of 3550 pounds to 3436 pounds, a change of 114 pounds. Total cumulative oil production is 802,963 barrels and cumulative gas production, 3,921,881 m.c.f. Gravity of the oil is 37 degrees A.P.I.

Buckner field, Columbia County, producing from Permian lime, and having 11 wells, all owned by Standard Oil Company of Louisiana, was discovered November 30, 1937, and its cumulative production to April 18, 1939, was 520,538 barrels of oil and 130,251 m.c.f. gas. Average sub-sea depth is 6900 feet and average thickness of structure, an anticline, is 71 feet. Gravity of the oil is 31.5 degrees. Total acres equal 1000, and allocated acres, 440. Original bottom hole pressure was 3195 pounds and April, 1939, pressure was 2900 pounds, a drop of 295 pounds. On April 18, 1939, its daily rate of production was 1664 barrels and gas/oil ratio 184, compared to an original gas/oil ratio of 375.

Magnolia field (Kerr-Lynn), Columbia County, producing from Permian lime and discovered February 23, 1938, on May 20, 1939, had 24 producing wells whose cumulative production is 624,444 barrels of oil and 586,380 m.c.f. of gas. It is an anticline structure. Production is found at average sub-sea depth of 7100 feet with an average pay thickness of 75 feet. Gravity of the oil is 37 degrees. Acres total 3000 and allocated acres, 970. Original bottom hole pressure was 3575 pounds and at latest reading 3414 pounds, a change of minus 161 pounds. Daily rate of production is 4503 barrels and gas/oil ratio on May 20, 1939, was 893 cubic feet.

Miller field (Rodessa), Miller County, and known as a lower Gloyd Pool, was discovered November 1, 1937. The upper Gloyd pool has 72 producing oil wells and is not operated under production control, its production per well being approximately 12 barrels per day. This is a fault type of structure and the average sub-sea depth of the lower Gloyd pool is 5750 feet in the Glen Rose. The lower Gloyd on April 1, 1939, had 43 wells producing 43 gravity oil. Cumulative production is, oil: 1,599,694 barrels; gas: 3,594,156 m.c.f. The original bottom hole pressure of 2200 pounds has dropped to 550 pounds.

New Lewisville field gets four new operations

El Dorado, Ark.—The Magnolia field, Columbia County, added 4 wells last week to bring to 28 the oil producers in this Permian lime field, now holding the lead in Arkansas districts for activity.

The newly discovered Lewisville field, LaFayette County, where two oil wells have been completed by East Texas Refining Company and Erwin & Leach accounted for 4 new locations last week, 4 operations having already spudded. All but one of the tests are operations of the field's discoverers, they having made 7 locations in the field, including the 2 wells now producing. Production in this field is from the Hill horizon of the Glen Rose series as correlated with Rodessa nomenclature. However, the two wells already completed show the formations at Lewisville have a tendency to be lensed.

Standard Oil Company of Louisiana last week added the twelfth oil well in the Buckner field, Columbia County, it being owner of all producers there. The same company has two tests at the final testing stage in the Village field, also in Columbia County.

Clark and associates' Strawn 1, NW SE SW 20-10-32, Little River County wildcat, that logged a shallow oil showing several months ago, is shut down waiting orders at 1598 feet after bailing dry at that depth.

Stanolind Oil & Gas Company continues to add to its block in Union County, in the east central part of township 17, range 13, securing most of the leases by assignment from G. G. Nesbitt, Jr.

Nine Arkansas permits

El Dorado.—Nine drilling permits were authorized last week by the Arkansas Oil and Gas Commission, as follows:

Columbia County—Placid Oil Company, R. Couch 1, C NW NW 19-17-19; Shell Oil Company Peoples Bank of Columbia 1, C NW SW 24-17-20; G. H. Vaughn and A. G. Oliphant, Joel Jones 1, C NE NE 21-17-20.

Miller County—Wadley-Johnson, M. A. Jacobs Estate 1, located 330 feet south and east NWc NE SE 33-18-26.

LaFayette County—East Texas Refining Company and Erwin & Leach, F. G. Wright et al 1, 330 feet south and 660 feet east NWc NW SE 24-16-24; Mrs. Floreda Harleston 1, 668 feet east and 330 feet south NWc SE NW 23-16-24.

Union County—Lion Oil Refining Company Clay 2, 660 feet west and 330 feet north SEc NE SW 12-18-18; Frank 1, 660 feet west and 330 feet north SEc SW NE 12-18-18; and V. R. Sims and associates Kelly 1, 330 feet north and east SWc NW SW 9-17-14.

New Mexico Fields

Sixteen new starts in eight fields end drilling slump. Wide extension for Vacuum area indicated as possibility.

Hobbs, N. M.—Partial recovery from the drilling slump that has been evident in Lea County during the past month materialized the past week with authorization of 16 tests for 8 fields. The bulk of the new activity involves offsets to completed oil wells.

The Lovington pool, which has 7 flowing oil wells, gained 2 operations, and has a greater number of necessary offsets pending. Amerada Petroleum Corporation is rigging up for State 2-A-L, C NE SW 1-17s-36e, and Magnolia Petroleum Company has derrick up to drill State 2-R, C NE SE 1-17s-36e, both being direct offsets to the largest completion. Magnolia Petroleum Company's Selby 1, C NW NE 7-17s-37e, 1¼ miles east by south of oil production, failed to score an increase in water in drilling at 4870 feet. Nominal show of water was encountered at 4793-97 feet, with an elevation of 3809 feet. It is low on structure. Repollo Oil Company's State 2-A-182, north offset to an east side producer, was drilling at 4800 feet, having cemented pipe at 4538 feet.

Magnolia Petroleum Company's State 1-S, C NE SW 34-16s-34e, 3¼ miles northwest of the Vacuum field, offered encouragement for production in logging show of gas with oil stain at 4652-55 feet. However, no additional porosity or shows were reported in drilling to 4700 feet. It has an elevation of 4090 feet, and is seeking production from the Vacuum horizon.

Slight reduction in the daily production allowable of prorated wells in Lea County was due to go into effect on June 1. The Oil Conservation Commission fixed the state's quota for the month at 117,000 barrels daily, including 4000 barrels designated for export from Eddy County fields and the Maljamar field, Lea County. The cut for the state amounted to 100 barrels.

The Eunice townsite sector of the Hardy field recorded a big producer and gained two new operations. Magnolia Petroleum Company's E. O. Carson 5, C SW NE 33-21s-37e, flowed 325 barrels of oil in 6 hours while running tubing after 200-quart nitro shot at 3670-3770 feet. Gauge through tubing has been delayed because of lease storage being filled. The company's Hugh Corrigan 3 is starting up as a south offset, and a company rig is being moved from the Vacuum area to drill Marshall Unit 3, C NW NW 34-21s-37e.

Vacuum field accounted for 6 of the new projects, thereby retaining its position as the most active drilling center in the state. Phillips Petroleum Company made authorizations for State-Santa Fe 30, C SW NW 26-17s-35e, and State-Mabel 2, C NW NW 35-17s-34e, while Shell Oil Company has started operations on State 3-N, C SW NE 28-17s-35e, and State 2-T, C NW SE 33-17s-35e. The latter has been subleasing a portion of its acreage to in-

New Mexico Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Eddy County—		
Flint Prod. Co., Dexter 1-L, se nw se 15-17s-30e	*	4335
Lea County (Eunice)—		
Drl. & Exploration Co., Inc., State 1-D, sw sw se 36-21s-36e	275	3809
Lea County (Langlie)—		
Anderson-Prichard Oil Corp., Wells-Conoco 7, c nw sw 4-25s-37e	650	3537
Lea County (Mattix)—		
North Shore Corp., Woolworth 3, sw sw nw 33-24s-37e	50	3576
Lea County (Monument)—		
Continental et al, Sanderson 5-B-14, ne nw sw 14-20s-36e	552	3843
Lea County (Vacuum)—		
Magnolia, State-Bridges 31, c ne nw 23-17s-34e	732	4650
Ohio, State-Warn 2, lse 2, c se nw 33-17s-35e	1272	4600
Standard of Texas, State 3, lse 5, c sw nw 27-17s-35e	600	4620
Texas Co., State 3-N, c sw nw 30-17s-35e	134	4750
State 1-Z, c nw nw 2-18s-34e	315	4700
Lea County (Wildcat)—		
Fullerton Oil Co., Walker 1-a, c sw nw 18-18s-32e	*	4383

* Failures; † Junked; ¶ Million cu. ft. gas.

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dependents, retaining an over-riding royalty. Skelly Oil Company made location for State 1-P, C NW NW 33-17s-35e. Magnolia Petroleum Company completed State-Bridges 31, C NE NW 23-17s-34e, situated on the northwest edge of the field, with a natural flow of 122 barrels of oil in 4 hours from lime at 4650 feet. The company rig has been skidded one location north to drill State-Bridges 34.

Anderson-Prichard Oil Corporation authorized 3 new tests in the sandy-lime belt. Operations have been started on E. J. Wells-Conoco 8, C N½ NE NW 4-25s-37e, and Wells-Conoco 9, C SW NE 6-25s-37e, both in the Langlie field. The company's State 2-A-32, C SE NW 32-24s-37e, situated on a farm-out by The Texas Company in the Mattix sector, was drilling at 600 feet.

Continental Oil Company et al's Lynn 2-A-28, C NW SE 28-23s-36e, is starting up as a south offset to their recent prolific lime well that halved the 1¼-mile interval separating the Cooper and Lynn fields.

Repollo Oil Company's State 2-D-157, NW NE SW 12-22s-36e, southeast outpost for the prolific lime area between the Eunice and Penrose fields, landed tubing late last week for completion at 3759 feet, with an elevation of 3488 feet. It is high on structure. Gulf Oil Corporation's Mattern 6-E, has been staked as an equal distance north offset.

Excessive gas volume has delayed completion of The Texas Company's State-University 18-H, C NE NW 19-20s-37e, an inside test for the Monument field. It was drilled to 3870 feet, or 325 feet sub sea, and tested 76 barrels of oil and 3,000,000 feet of gas in 24 hours through ¾-inch choke, with tubing packer at 3805 feet. Packer will be re-set to try for a lower gas/oil ratio. Phillips Petroleum Company's State-Hobbs 4, a north offset, was drilling below surface pipe.

California Fields

Rio Bravo outpost completion good for 3000 barrels. Potentialities of deep zone at Wasco are enhanced.

Los Angeles.—Considerable interest will be attached to the outcome of Superior Oil Company's new location in SEc 27-28-25 following recent completion of the company's Moodie 1, a Rio Bravo field outpost brought in for 3000 barrels at 11,550 feet to add considerable acreage to the field. This well which set 7⅝-inch casing at 11,529 feet, was drilled with one of the largest rigs ever seen in California. Flow has been restricted to meet proration requirements.

Potentialities of the ultra deep zone at Wasco, Kern County, were enhanced by completion of Standard Oil Company of California's KCL B-2 at 13,135 feet for 6240 barrels of 35.4 gravity oil daily after landing 7-inch casing at 13,100 feet. Another deep possibility in the same general neighborhood, Union Oil Company's KCL 1-36, Section 36-27-24, Shafter Wasco district, continues swabbing below 12,985 feet after having set 7-inch casing at 12,787 feet.

Completion of the deep test of the Stevens zone at Buttonwillow was delayed when liner collapsed in California Exploration Company's Dougherty-Salisbury 1, which had been plugged back to 12,814 from 12,989 feet. The perforated section of 1362 feet of 4¾-inch liner landed on bottom consisted of 153 feet. Cementation was through the holes at 12,659.

Reports are that a long string of casing will be cemented near 10,815 feet in Richfield Oil Corporation's KCL 1, deep test in Section 28-11-20 of Wheeler Ridge, Kern County, that stopped drilling at 11,004 feet in oil sand after logging first showings at 10,718 feet.

California Oil Lands' Occidental 2, wildcat in Section 24-26-20 of Lost Hills area that has so far recovered only salt water from first and second Temblor sands cored at 5538-88 and 5615-23 feet, respectively, will be deepened below 5625 feet.

Production performance of Standard Oil Company of California's Fleishauer 3-2, deep test in Greeley field, continues disappointing, the yield from 11,903 feet consisting of 265 barrels of oil and 535 barrels of water daily. However, two other projects in the field continue drilling with the same zone as the objective.

An operating agreement has been worked out between the Sun-Ben Oil Company and Union Oil Company for exploration of acreage in the La Purisima field, Santa Barbara County. The first job will be a shallow test in Section 28-8-24, between Lompoc and Los Alamos valleys and close to wells drilled some years ago by Union. Sun-Bell anticipates commercial production between 2300 and 2500 feet. Santa Barbara County oil history dates from 1906, when Union drilled the first well on Purisima anticline.

Petrol Corporation has decided to resume work in No. 33-5, a wildcat suspended some weeks ago at Grapevine, Kern County. This project, bottomed around 8950 feet, is within striking distance of the Vedder zone, according to scouts. Some unusual underground conditions were encountered in the test, this being a thick layer of basalt rock evidently from an ancient lava flow. Later, the drill penetrated sedimentary sands and shales and again encountered a lava flow, where work halted.

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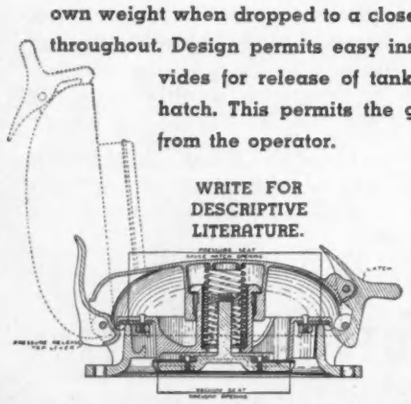

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California Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Los Angeles County (Athens-Rosecrans)—		
J. H. Marion, Rosecrans 2	115	7890
Los Angeles County (Dominguez)—		
Union, Callender 68	500	7395
Los Angeles County (Montebello)—		
Kern - St. Helens Properties, Monterey 28	302	6731
Los Angeles County (Torrance)—		
Standard, Marble 1-11	64	4970
Los Angeles County (Wilmington)—		
Long Beach Oil Dev. Co., "X" (LB) 2	2000	3866
"X" (LB) 6	no est.	3840
Signal O&G Co., Signal-LB-Newport CD 2	no est.	4275
Union Pacific, UP (LB) E-17	183	3329
Kern County (Arvin)—		
Texas Co., Jewett 1	1632	6211
Universal Consolidated, Universal-Derby 1	304	6173
Kern County (Cole's Levee)—		
Ohio, KCL F-2	70	9917
Kern County (Rio Bravo)—		
Superior, Moodie 1	3027	11550
Kern County (Wasco Semitropic)—		
Standard, KCL 8B-2	6110	13135
Kern County (Canal)—		
Shell, KCL A-36-14	1674	8340
Fresno County (Kettleman North Dome)—		
KNDA, 54-24H	1354	10865
Kern County (Midway-Sunset)—		
Manley-McGinn, No. 15	40	1233
Kern County (Mt. Poso)—		
Lindley C. Morton KCL 14-1	*	424
Kern County (Round Mountain)—		
Pan May, Kelly 2	*	1500
Los Angeles County (La Mirada)—		
McKeon et al, Carmenita 1	*	9157

* Failures; † Junked; ¶ Million cu. ft. gas.

Mountain States

Lance Creek busy; Pendroy structure wildcat shows. Garland field completion makes 100 barrels hour

Casper, Wyo.—With 4 new locations spotted in Lance Creek, Niborara County, during the past week that area again stepped well into the lead for active drilling fields in Wyoming with 11 holes going down simultaneously. Several Lance Creek wells are nearing completion stage.

In central Wyoming preparations are being made to recomplete General Petroleum Corporation's Government 1, NW NW SE 21-35n-77w, discovery well in Cole Creek field, Natrona County. The well has been perforating and testing through casing in the several sands encountered above the Lakota discovery formation after plugging back from the Sundance, which showed neither oil nor gas. Well plugged back inside the 6⅝-inch pipe set at 7974 feet on top of the Lakota, and gun-perforated opposite the Dakota, the Muddy, and the Mowry sands. The Dakota tested about 100 barrels per day, flowing by heads. Some free oil was found on test of the Mowry and Muddy formations, but the company has decided to cement off these horizons for engineering reasons and will produce the well from the Dakota and Lakota formations for the present.

The first producer for the current year in Garland field, Big Horn County, northern Wyoming, Yale Petroleum Company's Yates 2, NE NW SW 34-56n-97w, acidized and made 100 barrels per hour on initial test. Well is producing from the first break in the Madison lime horizon at 4000 feet.

Montana Strike

A new oil field for the state of Montana has apparently been opened by Gulf States Oil Company and the Zodiac Oil Company's Kellog 1, NE NW NE 33-28n-5w, wildcat test on the Pendroy Dome structure, Pondera County. The well drilled to 2850 feet, Madison lime, where good shows of oil were reported. Pumping equipment is being rigged up for a production test to be made this week.

No oil showings have been reported in Wheedon et al's 1, CSW NE 21-46n-64w, southwest extension test of Osage field, in Weston County, northeastern Wyoming. The well has cleaned out with cable tools to bottom at 3953 feet and is swabbing. Operators reported good saturation in cores recovered from 3923 feet to bottom, but the test failed to produce when swabbed down. Rotary mud is believed to have sealed off the producing formation.

Drilling has been started on the Mountain Fuel Supply Company's Clark 1, SEc NW NW 12-19n-104w, in the North Baxter Basin field, Sweetwater County, Wyoming. It is deepening from 264 feet, where it has been shut down for over a year. The company will drill to the gas producing formation of the field for completion. This well is the first to drill under an expansion program planned by the company to increase its productive gas reserves in the field.

Mountain States Completions

MONTANA

Company, Well and Location	Init. Prod. Bbls.	Depth
Toole County (Kevin-Sunburst Field)—		
A. E. Crumley, Fryberger 16, se ne sw 24-35n-3w	165	2867

WYOMING

Niobrara County (Lance Creek Field)—		
Continental, Emil Rohlff 2, nw se nw 32-36n-65w	1680	5410
Minnelusa, Joss 2, sec ne sw 6-35n-65w	845	5348

* Failures; † Junked; ¶ Million cu. ft. gas.

Michigan Fields

Three southwestern area fields are extended

Mt. Pleasant, Mich.—Extensions to three Southwestern Michigan fields which should give a combined addition of between 75 and 125 locations on a 10-acre basis, highlighted development for the week.

C. C. Goff's Barker 1, SW NW NE 13-1s-15w, Columbia Township, Van Buren County, a semi-wildcat, initialed 1500 barrels natural from Traverse limestone at 1203 feet, 5 feet in the

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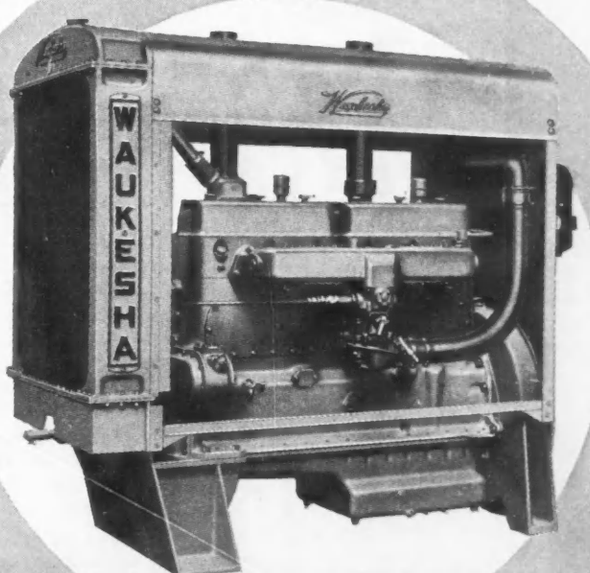

WAUKESHA
OIL FIELD ENGINES

lime. Nine locations were staked in the area immediately following completion. The well apparently is an extension of one of three pools but may prove to be a separate closure. It is a half mile south of the Upper Columbia pool as now defined, a mile north of Lower Columbia and a half mile west of the Berlamont pool.

New Salem field, Allegan County, was extended on three sides with some operators predicting that the field's present proven area of 350 acres will be doubled by the week's outpost developments. Major extension to the field was recorded by Borough, Fleming & Allen's Fein 1, SE SW NW 2-4n-13w, half mile north of production. Fein 1 topped Traverse at 1657 feet and bottomed at 1662 feet after acid production of 800 barrels.

Nearly a half mile northeast of the developed area, Norton, Inc.'s Homrick 1, Section 1-4n-13w, tested a Traverse pay at 1623 feet estimated good for 50 to 100 barrels. On the southeast side, Durham & Jones' Shaendorf 1, NW NE SE 11-4n-13w, acidized to 200 barrels per day at 1599 feet. It adds about a quarter mile.

In Kent County, Hugh Heinig's Bunker 1, NE NW SE 5-6n-12w, Walker Township, appeared to add a full quarter mile if not more to the previously proven area in the district as it tested for an estimated 150- to 250-barrel Traverse lime producer after the second acid treatment. It is producing from 1842 feet.

Two other Kent County tests, both wildcats, gave promise of either extending the proven area or opening new pools. Voorhees Drilling Company's Powers 1, Section 31-7n-12w, Kent County, a half mile northwest of the proven area, showed oil saturation at 1871 feet but was delayed in completion when casing was dropped and collapsed in the hole.

Freeland & Rogers' Whalen 1, Section 14-6n-12w, Wyoming Township, Kent County, three miles southeast of the Walker pool, is pumping from 4 to 8 barrels per day from Traverse at 2000 feet after acid treatment.

The one wildcat in the central part of the basin completed this week was dry in Dundee lime and will be abandoned. It was Tamblyn & MacGillivary's Gage 1, Section 28-22n-4w, Roscommon County. It bottomed at 3816 feet without logging oil saturation.

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Michigan Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegan County—		
Bell-Marks, Kidder 1, se sw nw 23-3n-12w	75	1637
Tiefenthal 1, ne nw nw 23-3n-12w	55	1639
Norton, Inc., Homrick 1, nw sw sw 1-4n-13w	65	1623
Borough & Flemings, Fein 1, se sw nw 2-4n-13w	800	1662
Wilson & Gordons, Loew 1, se se nw 5-4n-13w	*	1648
Muskegon Dev. Co., Homrich 1, nw se ne 11-4n-13w	650	1598
Durham & Jones, Shaendorf 1, nw ne se 11-4n-13w	190	1599
Pet. Enterprises, Byers 2, se nw ne 22-4n-13w	270	1580
Salem Oil Co., Smith 1, nw nw nw 23-4n-13w	115	1585
Robert Bond, Buck 1, nw sw nw 9-3n-11w	*	1821
Clare County—		
American Production, Bruckart 1, c n s n 36-17n-4w	¶7	1282
Talbot Oil Co., State 2, se sw 28-19n-6w	1450	3882
Kent County—		
R. E. King, Muddler 1, se sw se 32-7n-12w	500	1820
Smith Pet. Co., Zeef 1, se se se 32-7n-12w	300	1794
Crown Dev. Co., Armitage 1, nw ne sw 33-7n-12w	40	1868
Ide & Glavin, Gravel Co. 1, sw ne sw 33-7n-12w	650	1834
Hugh Heinig, Bunker 1, ne nw se 5-6n-12w	240	1842
Wolverine Oil Co., Johnson 2, ne nw ne 5-6n-12w	1350	1782
Freeland & Rogers, Whalen 1, se ne nw 14-6n-12w	8	2000
H. E. Davies, Springstead 1, nw nw sw 21-6n-12w	*	1982
Ottawa County—		
Century Oil Co., Miller 1, ne ne se 14-7n-14w	*	2024
Roscommon County—		
Tamblyn & MacGillivary, Gage 1, ne ne sw 28-22n-4w	*	3816
Van Buren County—		
Bridger Basin, Ulrath 2, ne nw nw 28-2s-16w	*	1001
Bloomingdale Dev., Decker 4, sw se se 7-1s-14w	300	1215
O. O. Borden, Stewart 6, ne nw se 7-1s-14w	100	1223
Jetter Drilling Co., Munn 2, nw se sw 11-1s-14w	100	1325
Van Arnanm, Willerton 1, se se se 10-1s-15w	*	1280
Thompson & Fitchett, Fox 1, sw se nw 12-1s-15w	*	1185
J. W. McIntosh, Henry 3, nw nw nw 12-1s-15w	600	1190
W. E. Dotson, Stockton 1, nw sw ne 12-1s-15w	80	1182
C. C. Goff, Barker 1, sw nw ne 13-1s-15w	1500	1203
Kooprasch, Tr., Cooley 1, sw sw se 13-1s-15w	*	1240
Bridger Basin, Parisian 1, ne nw nw 13-1s-15w	5	1268
Clapsaddle & Harris, Wilmason 1, se sw se 13-1s-15w	*	1216
Pepper 1, ne ne ne 23-1s-15w	150	1216
J. B. Reed, Cooley 2, ne se se 14-1s-15w	*	1255
J. S. Slagel, Wacker 1, n n nw 24-2s-17w	*	1035

* Failures; † Junked; ¶ Million cu. ft. gas.

WILDCAT REPORT
New Starts and Completions

ARKANSAS
FIRST REPORTS

La Fayette County—East Texas Ref. Co. and Erwin & Leach s F. Harleston 1, n½ se nw 23-16s-24w, moving in materials; F. G. Wright 1, nw se 24-16-24, spudded.

Miller County—J. K. Wadley and C. E. Johnson's Jacobs 1, nw se 33-18-26, moving in materials.

COMPLETIONS

Columbia County—Phillips Pet. Co.'s Askew Unit 1, c ne nw 4-17s-21w, elev 287 ft, top Nacatoch 1809 ft, chalk 2145-2455 ft, top anhydrite 3518 ft, base massive anhydrite 3695 ft, top James lime 4245 ft, top Travis Peak 4620 ft, top lower Marine 5920 ft, top Permian lime 8035 ft, abnd 8510 ft.

LaFayette County—Erwin, Leach and East Texas Ref. Co.'s Bell Estate 1, nw nw 19-16-23, 100 barrels oil daily, 3477 ft.

Union County—Oliphant Oil Co.'s Union Sawmill Co. 1, n½ nw sw 22-19s-14w, elev 158 ft, topped Permian lime 7903 ft, salt water, strong sulphur odor, abnd 7950 ft.

CALIFORNIA
FIRST REPORTS

Fresno County—E. A. Parkford's No. 1, 330 ft w of center 24-20-15.

ILLINOIS
FIRST REPORTS

Clark County—George B. Sherritt's Serena Turner 1, se sw nw 14-11n-14w, rig.

Coles County—Carter Oil Co.'s Akers 1, nw sw sw 1-11n-7e, rig.

Fayette County—Giffert Drilling Co.'s Garver 1, se nw ne 26-6n-2e, dr.

Johnson County—Tunnel Hill Oil Co.'s J. Boner 1, c w sw ne 30-11s-3e, Tunnel Hill tnp, shut down.

Knox County — O. H. Hammer's Harry Bragg 1, ne se se 9-11n-2e, Knox tnp, dr.

McDonough County—De Kalb Corp.'s Hartsook 1, nw nw se 14-4n-4w, dr.

Wabash County—Al Wilhelm's Baird 1, c n nw ne 1-2s-13w, Keensburg tnp, dr.

Washington County—Gulf Refining Co.'s G. W. Baldwin 1, sw nw 4-1s-1w, 2½ mi northwest of Irvington, dk.

White County—Ben H. Nation's McIntosh 1, e½ se sw 31-3s-8e, dr.

COMPLETIONS

Clay County—Dick Duncan's Huber 1, sw se nw 17-5n-5e, Larkinsburg tnp, abnd 2525 ft.

Jefferson County—Pyramid Petroleum Co.'s Inland Steel 1, c s nw sw 30-4s-2e, Elk Prairie tnp, top St. Louis 3005 ft, abnd 3101 ft.

Washington County—Pollack's Leibrock 1, se se sw 2-3s-3w, Pilot Knob tnp, abnd 1379 ft. Wilson et al's Bertha Greenburg 1, nw sw sw 28-3s-3w, Pilot Knob tnp, top Benoist 1321 ft, abnd 1339 ft.

Wayne County—Iroquois Oil & Gas Co.'s Winzenberger 1, c ne sw se 7-3s-9e, Leech tnp, top McClosky 3359 ft, abnd 3423 ft. Whitty et al's Duke 1, c n ne ne 28-2s-6e, top McClosky 3315 ft, abnd 3402 ft.

INDIANA
FIRST REPORTS

Vanderburgh County—Ansel Douglas et al's Wm. S. Peter 1, sw sw 4-6s-10w, dr.

COMPLETIONS

Posey County—Tide Water Associated Oil Co., Exchange Oil Co. and Yingling & Hayes' Luck P. Hyne 1, nw nw ne 10-4s-13w, Rodd tnp, top McClosky 2900 ft, abnd 3000 ft. A. Grewe & August Kruse's (Clint Crosby's) Pauline Sherer 1, nw nw sw 13-7s-13w, Black tnp, pumped 63 bbls oil and large quantity of water from McClosky, td 2720 ft.

KANSAS
FIRST REPORTS

Butler County—Lucas et al's Lucas 1-A, ne nw nw 14-28s-6e, lcn. Marylyn Oil Co. et al's Hoard Ranch 1-A, sw ne ne 28-29s-8e, lcn.

Comanche County—Kerr-Lynn Oil Co. et al's McMoran 1, c se nw 25-34s-16w, lcn.

Greenwood County — Marylyn Oil Co.'s Burke 1, nec sw 27-24s-11e, rig.

Johnson County—Sagamore Oil & Gas Co.'s Knabe 1, nec nw 29-14s-22e, dr.

Marion County—Tide Water Associated Oil Co.'s Junghanns 1, sec 23-18s-5e, rig.

STATE	WILDCATS STARTED		WILDCAT TESTS COMPLETED							
			Total		Oil		Gas		Dry	
	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year
Alabama	...	3	...	1	...	...	...	...	...	1
Arkansas	3	17	3	10	1	1	...	...	2	9
California	1	110	...	56	...	16	...	1	...	39
Colorado	...	...	...	3	...	...	...	...	...	3
Georgia	...	3	...	1	...	...	...	...	...	1
Illinois	9	224	6	156	...	13	...	...	6	143
Indiana	1	12	2	14	1	5	...	1	1	8
Kansas	7	94	6	84	2	30	...	1	4	53
Kentucky	1	7	...	11	...	6	...	...	...	5
Louisiana	4	60	...	38	...	7	...	...	...	31
North Louisiana	2	22	...	11	...	3	...	...	...	8
South Louisiana	2	38	...	27	...	4	...	...	...	23
Michigan	5	87	7	126	2	9	...	...	5	117
Mississippi	...	5	...	1	...	...	...	...	...	1
Missouri	...	1	...	...	...	...	...	...	...	...
Montana	...	1	...	1	...	...	...	...	...	1
New Mexico	...	18	1	6	...	...	...	1	1	5
New York	...	...	...	2	...	...	...	1	...	1
Oklahoma	3	81	4	78	...	9	1	5	3	64
Ohio	...	2	...	7	...	1	...	...	...	6
Pennsylvania	...	1	...	2	...	...	...	...	...	2
South Dakota	...	1	...	...	...	...	...	...	...	...
Texas	22	450	33	469	5	48	1	6	27	415
East Texas	4	54	6	43	...	2	1	1	5	40
North Texas	1	65	6	102	1	19	...	1	5	82
Gulf Coast	3	55	2	37	...	3	...	...	2	34
Panhandle	...	5	1	5	...	...	...	...	1	5
South Texas	11	178	12	201	3	16	...	3	9	182
West Texas	3	93	6	81	1	8	...	1	5	72
West Virginia	...	1	...	...	...	...	...	...	...	...
Wyoming	...	1	...	1	...	...	...	...	...	1
Total United States	56	1179	62	1067	11	145	2	16	49	906

Rice County — Phillips Petroleum Co.'s Hemmer 1, nwc se 16-18s-10w, lcn.

COMPLETIONS

Ellis County—Smith's Werth 1, swc se 33-15s-18w, 2½ mi s Madden pool, lcn abnd.

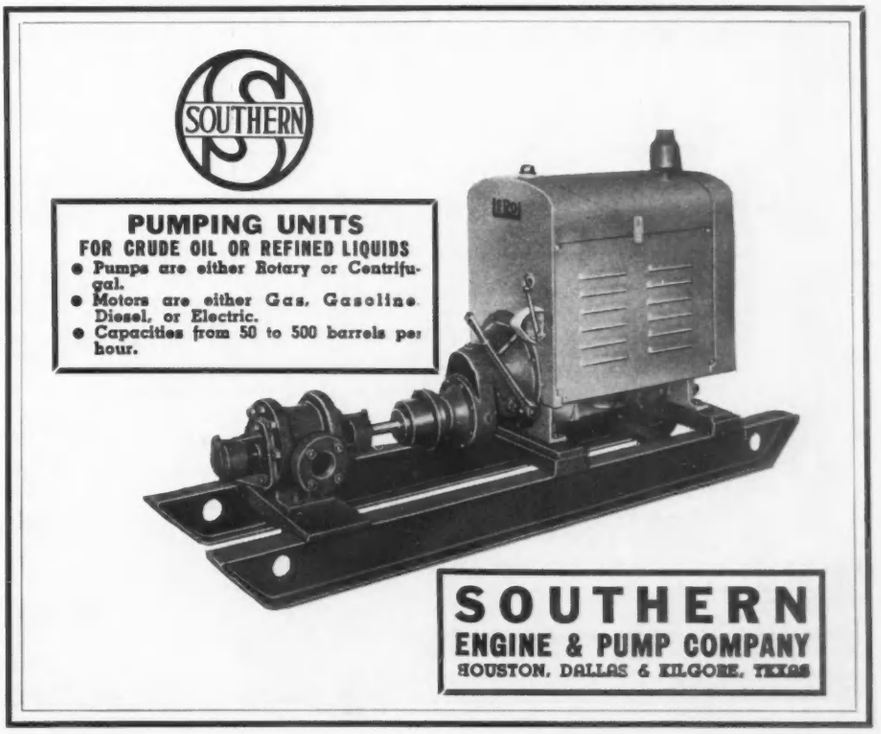
Rice County—Vernon Oil & Gas Co. et al's Dupont 1, sec ne 22-19s-10w, e Bowman pool, top Topeka 2546 ft, top Lansing 2945 ft, top conglomerate 3247 ft, abnd 3325 ft. Gulf Oil Corp.'s Linke 1, cel ne se 36-19s-10w, w Chase pool, top Arbuckle lime 3280 ft, td 3283 ft, pumped 327 bbls. Phillips Petroleum Co.'s Proffitt 1, cel ne ne 8-20s-9w, e Chase pool, top Arbuckle lime 3244 ft, pumped 212 bbls 3259 ft.

Saline County—Central States et al's Crawford 1, nw sw ne 26-13s-3w, 3 mi n Salina, top Mississippi 2786 ft, top Hunton 3170 ft, top Viola 3389 ft, top Simpson 3570 ft, top Arbuckle lime 3615 ft, abnd 3632 ft.

Woodson County—Sheedy et al's Long 1, sec sw 28-26s-14e, sw Big Sandy pool, top Mississippi 1500 ft, abnd 1550 ft.

KENTUCKY
FIRST REPORTS

Daviess County—Hart, Hart & Williams' Fee 1, northeast of Maceo, dr.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NORTH LOUISIANA

FIRST REPORTS

Natchitoches Parish—Jack Lent's Walker 1, nw nw 9-10n-10w, moving in materials.

Tensas Parish—Continental Oil Co.'s Cammack 1, located 330 ft west and 1690 ft south nec 31-13n-12e, rigging up.

SOUTH LOUISIANA

FIRST REPORTS

Plaquemines Parish—Gulf's State PP 8, 12.09 mi s, 2 degrees, 47 minutes w from Jump Light on Mississippi River, or 2425 ft e and 920 ft s of NWc of sec 18-23s-31e, lcn.

St. Landry Parish—Adams' Babineaux 1, Cankton area, 414 ft fr w line and 464 ft fr s line of Babineaux tr, 38-8s-4e, lcn.

MICHIGAN

FIRST REPORTS

Allegan County—Columbia Oil Co.'s Barnes 1, ne ne sw 6-2n-13w, dr. Pure Oil Co.'s Smith 1, se nw nw 32-1n-15w, dr. Spencer Cook's Brooks 1, ne nw se 34-2n-12w, dr.

Cass County—Shimmel Trustee's Simpson 1, se sw sw 20-7s-13w, lcn.

St. Joseph County—A. J. Hoyt's Jailor 1, se se ne 12-6s-19w, rig.

COMPLETIONS

Allegan County—Borough & Flemings' Fein 1, se sw nw 2-4n-13w, natural initial 170 barrels, after acid initial 800 bbls, 1662 ft. Robert Bond's Buck 1, nw sw nw 9-3n-11w, abnd 1821 ft.

Kent County—Freeland & Rogers' Whalen 1, se ne nw 14-6n-12w, Traverse 1866, so 1870-1990, td 2225, pb to 2000 ft, acidized, initial 8 bbls day. H. E. Davies' Springstead 1, nw nw sw 21-6n-12w, Traverse 1875 ft, abnd 1982 ft.

Ottawa County—Century Oil Co.'s Miller 1, ne ne se 14-7n-14w, abnd 2024 ft.

Roscommon County—Tamblyn & MacGillivary's Gage 1, ne ne sw 28-22n-4w, Dundee lime 3749 ft, abnd 3816 ft.

Van Buren County—J. S. Slagel's Wacker 1, c n½ n½ nw 24-2s-17w, abnd 1035 ft.

OKLAHOMA

FIRST REPORTS

Logan County—Cooper Drilling Co. et al's Miller 1, nwc se 4-17n-4w, lcn.

Osage County — Charles Petroleum Co.'s Osage 1, c n½ nw sw 10-28n-11e, lcn.

Payne County—Hoagland's Stanolind 1, sec sw 27-18n-4e, lcn.

COMPLETIONS

Coal County—Marshall's Clellan 1, ne sw se 26-1n-8e, w Clarita pool, lcn abnd.

Garvin County—Kerr-Lynn Oil Co.'s Butterly 1, nec se 22-1n-1e, 3 mi ne Hoover, otd 3705 ft, top Oread 4045 ft, td 5005 ft, perforated 2991-3010 ft, Prue formation, 2,666,000 cubic feet gas, completed.

Lincoln County—Starr's Jorrow 1, sec sw 28-15n-6e, 2 mi w Stroud, top Prue 3208 ft, abnd 3270 ft.

Logan County—Helmerich et al's Johnson 1, sec 2-15n-1e, 2½ mi s Meridan pool, top second Wilcox 5313 ft, abnd 5370 ft.

EAST TEXAS

FIRST REPORTS

Cass County—Red Iron Drilling Co.'s Spearman 1, Samuel Burnham sur.

Ellis County—C. M. Beckner et al's H. A. Styles 1, 150 ft out of sec of west 35-acres of south 70-acres of north 125-acres of A. Bullock sur, 3½ mi w Maypearl, dr 895 ft.

Freestone County—W. B. Johnson Drl. Co.'s D. O. Nettles 1, 330 ft fr n and 3150 ft fr e lines of 291-acre tract, or 3150 ft fr e and 5400 ft fr s lines of W. Carter sur, 4 mi se Streetman, rir.

Kaufman County—Atwood, Glaspy & Taylor's Fee 1, 1310 ft fr e and 5400 ft fr n lines of F. Cortez sur, and 300 ft south of railroad, 3 mi nw Mabank, elev 314 ft, Pecan chalk 1600-1715 ft, Austin chalk 2352-2875 ft, top Woodbine series 3277 ft, sd at 3349 ft but to deepen.

COMPLETIONS

Hill County—C. E. Sykes-Brannon et al's J. G. Weatherby 1, 486 ft fr n and 1042 ft fr w lines of W. C. Merriweather sur, 4 mi se Hillsboro, elev 783 ft, abnd 2557 ft.

Kaufman County—Valentine & DeArman's C. E. Bauman 1, 4500 ft fr se and 5500 ft fr ne lines of D. Falcon sur, 1½ mi s Kaufman, elev 410 ft, Austin chalk 1728-68 ft, t p Woodbine 2619 ft, top Georgetown lime 3000 ft, abnd in lime 3020 ft.

Leon County—J. K. Hughes Oil Co.'s H. Pearlstone 1, 330 ft fr ne and 150 ft fr se lines of J. F. Files sur, 4 mi s Keechi, elev 276 ft, Pecan chalk 3807-3920 ft, Austin chalk 4876-5187 ft, top Woodbine series 5495 ft, top sand 5520 ft, top water sand 5530 ft, abnd shale 5566 ft.

Navarro County—W. H. Strong et al's Estes Bros. 1, 1900 ft fr s and 660 ft fr e lines of Wm. Bartells sur, 1½ mi sw Roane, elev 384 ft, abnd 1355 ft.

Panola County—Turner & Smith's J. W. Bird 1, George Gallaspie Survey, 40 mil ft wet gas daily, td 4997 ft, Glen Rose lime, elev 279 ft, base massive anhydrite 4870 ft.

Smith County—T. T. Grant et al's T. F. Thweatt 1, 481 ft fr n and 1604 ft fr w lines of 188-acre tract, J. Burch sur, 2 mi ne Garden Valley, elev 539 ft, top Pecan chalk 3486 ft, abnd 4508 ft.

NORTH TEXAS

FIRST REPORTS

Archer County—L. T. Burns et al's G. A. Jennings 1, 1350 ft fr n and 150 ft fr e lines sec 2, A. T. Akers sur A-922, lcn for 1450-ft test.

COMPLETIONS

Archer County—C. A. Johnson et al's C. Threet 1, 1310 ft fr n and 1050 ft fr e lines of sec 107, Jefferson C.S.L. sur, abnd 1102 ft. British-American Oil Prod. Co.'s T. B. Wilson 1, nw nw nw H&TC sec 12, blk 3, Gunsite lime 1652-54 ft, top Strawn lime 3417 ft, top Bend lime 4666 ft, td 4739 ft, cem cas then perforated 64 shots 4660-80 ft, flowed 111 bbls 44° oil 3 hrs natural, used 3500 gals acid and flowed 300 bbls oil 8 hrs and quit.

Clay County—Sussex Oil Corp.'s Mrs. E. A. Glasgow 1, 150 ft fr ne and 1500 ft fr se lines of blk 35, Bacon sub-div, abnd 1404 ft.

Cooke County—Continental Oil Co.'s Mary Gwyn 1, 200 ft out of nec tract, F. J. Lindheimer sur A-516, 1 mi w Lindsay, abnd in Ellenberger lime 1950-75 ft.

Haskell County—Amerada Pet. Corp.'s C. J. Kleiner 1, 660 ft out of nec of J. M. Cass sur No. 57, 7 mi e by n Haskell, top Home Creek lime 2510 ft, top Adams Branch 2869 ft, top Smithwick lime 4970 ft, abnd 5607 ft.

Wise County—R. Layton et al s I. C. Morrow 2, 1450 ft fr s and 260 ft fr w lines of tract, H. Ethridge sur A-278, abnd 593 ft.

TEXAS PANHANDLE

COMPLETIONS

Lipscomb County — Darrouzett Oil Corp.'s Etta B. Pugh 1, 330 ft fr n and 990 ft fr w lines H&TC sec 1126, blk 43, elev 2570 ft, abnd with 800 ft of salt water at 3395-3401 ft.

WEST TEXAS

FIRST REPORTS

Concho County—Floyd C. Dodson et al's Robt. Wilson 1, 1250 ft fr w and 425 ft fr n

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lines of sec 1, Thos. Greene sur, mim for 3500-ft test.

Jones County—R. H. Roark et al's Dallas Southard 1, 800 ft fr n and 400 ft fr e lines of se-204.2-acre tract, sec 8, Deaf & Dumb Asylum Lands, mim for Palo Pinto lime test. Phillips Pet. Co.'s J. R. Montgomery 1, 990 ft fr n and 330 ft fr w lines T&P sec 5, blk 16, 1 mi sw Hawley, rur.

COMPLETIONS

Jones County—Humble's John Sears 1, 582 ft fr n and 330 ft fr w lines T&P sec 36, blk 18, abnd with hfw 3045-50 ft. Carroll W. Snoddy et al s C. L. Stephens 1, 200 ft out of sec sec 35, Orphan Asylum Lands, abnd with hfw 2265-2301 ft.

WEST CENTRAL TEXAS

FIRST REPORTS

McCulloch County—J. E. Ellis et al, Chas. A. Johnson 1, 750 ft fr s and 750 ft fr e lines of sec 2, blk 2, Wm. Gann sur, mim.

COMPLETIONS

Coleman County—Anzac Oil Corp.'s J. P. Morris 4-C, 5200 ft fr n and 7060 ft fr w lines of David Breeding sur No. 728, elev 1620 ft, Strawn pay 2174-91 ft, td 2192 ft, pb to 2191 ft and shot 20 qts nitro then flowed 228 bbls oil 2-1/3 hrs via tubing.

McCulloch County—J. E. Ellis et al's Coker 1, sec 2, Wm. Gann sur, abnd in water sand 270-75 ft.

Palo Pinto County—Hickock & Harry Reynolds' Johnson 1, B. McNelly sur, abnd with hfw 2358-78 ft. Palo Pinto O&G Co.'s Strawn Coal Co. 26, H. Bird sur, trace o&g in sandy-lime 2970-80 ft, top Ellenberger lime 3790 ft, abnd 3845 ft.

SOUTH TEXAS

FIRST REPORTS

DeWitt County—G. M. Richardson's McCurdy 1, 330 ft s and 160 ft w of se cor C. A. Schlinke 796-ac tr, but in 693-ac McCurdy tr, John C. Hunt sur, originally abandoned 10-12-38 by Mar-Jo Oil Co., now rigging up to pump, 80 ft.

Duval County—Bridwell Oil Co.'s Welder 2, 330 ft n line, 330 ft e line of sw 160-ac of Anna Collins sur 552, lcn.

Jim Hogg County—Humble Oil & Refining Co.'s Mestena 2, 500 ft s line, 7600 ft w line of Francisco Pena "Palo Blanca" gr, lcn. Magnolia Petroleum Co.'s Yzaguirre 1, 4500 ft w line, 900 ft n line of 14,987.2-ac lse, Jose Manuel Ramirez "Agua Nuevada Abajo" gr, lcn.

Jim Wells County—Randon Oil Co.'s San Antonio Joint Stock Land Bank 1, 330 ft e line, 990 ft s line, blk 12, W. H. Sartain and Co. subd, Wadsworth sur, drilling 2000 ft.

Kenedy County—Humble Oil & Refining Co.'s Kenedy 3, 18,200 ft e line, 7800 ft n line of X. Salinas sur in San Pedro de las Molas gr, moving in.

Live Oak County—R. G. Putillo and M. R. Sanguinet's Miller 1, 1020 ft nw line, 6600 ft sw line, Willis P. Darby sur, Ab-1022, lcn. Rupert P. Richer's Fee 1, 990 ft n line, 990 ft w line of tr 9, Hamilton Bros. Ranch subd, "A" William O'Docherty original gr, lcn.

McMullen County—R. P. Ricker's La Chusa Land Co. 1, 330 ft n line, 330 ft w line of se¼ of nw¼ sec 52, Hugo Nadler sur Ab-709, rigging up.

Starr County—W. W. Zimmerman's Salinas de Guerra 2, 330 ft w line, 390 ft s line of blk 30, sur 299, lcn.

Webb County—Gilcrease Oil Co.'s Frost 1, 330 ft n line, 330 ft e line of CCSD and RGNG RR sur 17, lcn.

Wilson County—John F. Camp's Bundrick 1, commence at s'ly e line cor Mary Glass 100-ac tr, thence 1025 ft nw along ne line, thence 660 ft ne at rt/ang in Bundrick 640-ac tr, H&TC RR sur 111, lcn.

COMPLETIONS

Bastrop County—H. Deskin's Rivers 1, 150 ft s line, 150 ft e line, 162-ac tr, E. Standifer sur, abnd 2135 ft. V. A. Hughes' Lentz 1, 1521 ft most n'ly n line, 1125 ft most e'ly e line, 158-ac tr, Freeman Wilkinson sur 21, estimated 75 barrels per day on pump, 2460 ft.

Caldwell County—Ben H. Fuchs' Chamberlain 1, 693 ft w'ly sw line, 1005 ft s'ly nw line, 300-ac tr, abnd 834 ft.

DeWitt County—Sookey-Nick Oil Corp.'s Steinmann 1, from the se cor of Rudolph Lehmkul sur e along n line of Blue sur, 1697 ft, thence s 937 ft in Uriah Blue sur, abnd 2505 ft.

Duval County—Argo Oil Corp.'s Benavides 1, 1026.5 ft w line, 466 ft s line of 200-ac lse, P. Benavides sur 238, abnd 5604 ft. Proctor's Fredericks 1, J. H. Gibson sur, abnd 1092 ft.

Kenedy County—Humble Oil & Refining Co.'s Kenedy Ranch 2, El Penascal gr, abnd 7818 ft.

Nueces County—Seaboard Oil Corp.'s La Prelle 1-A, 3100 ft s line, 1178 ft e line of a 332.42-ac lse, blk 9, Roberts and White subd, potential 73 barrels per day, 7440 ft.

Schleicher County—Lone Star Gasoline Co.'s Page 2, 660 ft s line, 1902 ft w line, sec 46, blk "L," GH&SA sur 31, abnd 5795 ft.

Starr County—Whitfield & Southers' Bennett & Carruth 1, 312 ft n line, 1242 ft e line, of tr 182 por 90, Juris de Carmargo, abnd 3012 ft.

Webb County—Gordon Johnson's Adami 1, AB&M sur 345, pumped 35 barrels 999 ft. Navarro Oil Co.'s Benavides 2, 834 ft sw line, 1053 ft nw line of blk 11, sec 1, Josefa Cuellar gr, abnd 3510 ft.

TEXAS GULF COAST

FIRST REPORTS

Brazoria County—McCarthy Drilling Co.'s Houston Farms Dev. Co. 1, Chocolate Bayou area, 9502 ft fr nw line and 1980 ft fr ne line of blk 9, lot 7, J. F. Perry and E. M. Austin sur, lcn.

Ft. Bend County—O. S. Martin's Blakley 1, Fulsher area, 2000 ft n of s line and 2900 ft w of e line of F. Frederick sur, lcn.

Harris County—Housh & Thompson's Krey 1, Addicks area, 466 ft out of sec blk 22, Meadowbrook Farms subd, 3 mi sw of Addicks, lcn.

COMPLETIONS

Madison County—Mugford & Camsey's Andrew 1, nw of Madisonville, 800 ft n of s line and 530 ft w of e line of S. S. Cole sur, abnd 2018 ft.

Orange County — N. W. Hunter's Miller-Vidor Lbr. Co. 1, Vidor area, 1400 ft n and 466 ft e of SWc of J. M. Swisher sur, abnd 7011 ft.

NEW MEXICO

COMPLETIONS

Lea County—Fullerton Oil Co.'s Walker 1-a, c sw nw 18-18s-32e, elev 4383 ft, top anhydrite 915 ft, abnd in water sand 4373-83 ft.

Must put orifice meters on Magnolia separators

Arkansas Oil and Gas Commission ordered effective June 1, 1939, all gas produced from the Lime (Permian) pool of the Magnolia field, Columbia County, shall be accounted for by orifice meter measurement.

"The record of the measurement (preferably in the form of a 7-day chart to be computed by the commission's engineers) shall be available to the commission's representatives at all times and these measurements shall be used in obtaining operative lease gas/oil ratios," the amending order of the commission stated. "The meters required shall be installed on the gas vent line of every oil and gas separator."

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NOTES FOR THE Equipment Buyer and User

Small Arc Welder

THE LINCOLN ELECTRIC COMPANY

A small motor-generator type arc welder, said to provide greater convenience and accuracy in welding because of a new self-indicating dual continuous current control, is announced by The Lincoln Electric Company, Cleveland, Ohio.

The welder, known as the "SA-150," has both job selector and current control calibrated and equipped with dials which indicate the type of work and number of amperes for each and every setting. It is claimed that this development enables the welding operator to secure highest quality welds and highest possible welding speeds because he can vary both the slope of the volt-ampere curve and the amount of welding current independently and positively to suit every job encountered. Both voltage control, (job selector), and current control are continuous in operation, providing countless possible combinations of voltage and current. According to the manufacturer, this feature simplifies the setting of the control and accounts for an exceptionally wide welding range as to types of work, welding conditions, sizes of electrodes and thicknesses of materials. Being continuous, the control can be advanced or retarded in increments as fine as desired.

The "SA-150," despite its moderate size, has a large number of welding applications within its scope. At the lower part of its range, the welder delivers a current of light-penetration characteristics for the welding of extremely light-gauge material. At the upper portion of its range it delivers ample current for the speedy welding of heavier materials. The welder's current range of 45 to 200 amperes fits it for sheet metal work, hard facing of many types, pipe welding, cast iron repair, garage work, fit-up and auxiliary work in shops where general welding predominates, regular production welding involving steel, alloy and non-ferrous plates and shapes. The welder can be used with either bare or shielded arc type electrodes.

Small motor-generator type arc welder, announced by The Lincoln Electric Company, with self-indicating dual continuous control of voltage and current.

A feature which broadens the utility of this new handy-sized, single-operator machine is the use, at proper points, of class B insulation. Complete absence of inflammable materials, such as cotton, linen, fiber, wood, bakelite, etc., enables the machine to withstand sustained operation under overload conditions.

The "SA-150" is powered with a "Linc-Weld" squirrel-cage induction type motor for across-the-line starting. Connections are readily accessible for either 220 or 440 volts, 3 or 2-phase, 60 or 50 cycles as desired; the machine can be supplied for 550 volts or special voltages.

Construction is arc welded drip-proof steel. Four steel feet welded to the base and drilled permit bolting the welder in stationary installations or attaching the optional three-wheeled running gear. Floor space occupied is less than 4 square feet.

Compressors

SULLIVAN MACHINERY COMPANY

Sullivan Machinery Company, Michigan City, Indiana, announces the addition of a completely new line of portable air compressors known as the "Zeph-Air."

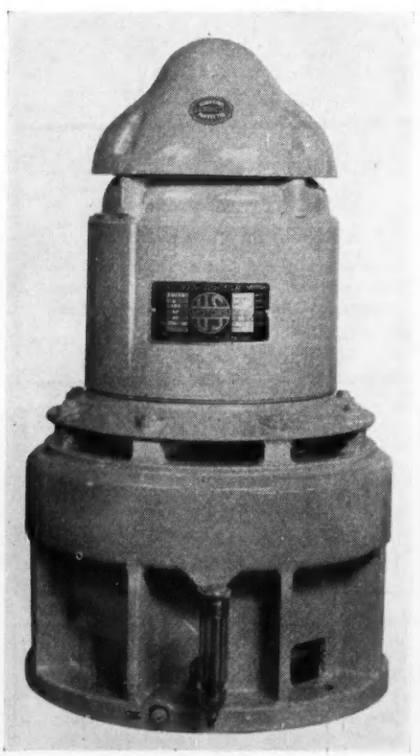
The new line features compact construction, self starters and refinement of other details to provide extreme mobility and ease of operation.

Two sizes are available with capacities of 60 and 85 cubic feet per minute, respectively, of delivered air. Although these compressors have capacity to operate concrete breakers and rock drills, they are so small and compact that the two-wheel mountings can be towed by a pleasure car and the skid-mounted models can be mounted in the body of standard pick-up trucks.

Vertical Electric Motor

U. S. ELECTRICAL MOTORS. INC.

U. S. Electrical Motors, Inc., Los Angeles, California, has introduced the "Syncrogear" Type GVD small-horsepower electric motor especially designed to meet conditions peculiar to vertical operation. An important design feature is the incorporation of a small geared oil pump which forces a supply of oil to bearings, gears, and pinions. The makers assert that the unit is easily mounted, compact, and well balanced in design.



U. S. Vertical Motor

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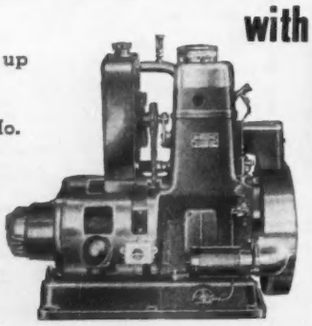
Vertical plants 1500, 2500, 6000 wat's. Manual or electric starting are fully automatic.

Push button control, remote or at engine. Horizontal plants 4000 to 8000 watts.



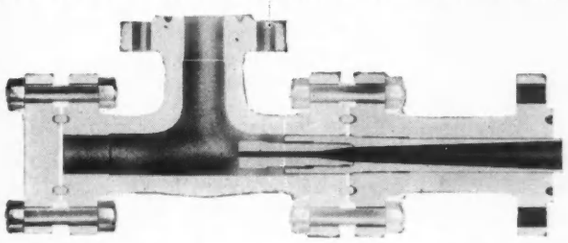
You can set up one of these dependable unit Electric Plants in jigtime and your worry about light and power is over. As a standby or for regular operation, it furnishes current at less than 1c a K.W.H. from non-explosive fuel. For extra power Witte synchronized, multiple hook-up meets varying loads at lowest cost. No engineer required to run a Witte, either. Fueling and oiling are about all that is required. See your supply dealer or write.

WITTE ENGINE WORKS
196-A Oakland Ave. Kansas City, Mo.

Expansion Tube Choke
CAMERON IRON WORKS

Cameron Iron Works, Inc, Houston, Texas, is offering an expansion tube choke designed to reduce well-head pressures by stages in flowing high-pressure wells, and at the same time regulate the expansion of gas sufficiently to prevent freezing of flow-lines between Christmas tree and separator. The assembly consists of a flanged housing, a long expansion tube, and a positive bean. Both the bean and the expansion tube are designed for removal through the "run" of a flanged tee.

The function of the choke, according to the manufacturer, is as follows: Gas passing through the restricted diameter of the positive bean enters the tapered expansion chamber formed by the outer end of the positive bean and the long expansion tube. The tapered tube mechanically controls the rate of expansion beyond the restricted diameter of the positive bean. In so doing, it greatly assists in retarding the drop in temperature by increasing the area of metal through which it may absorb heat during expansion. Since turbulence is eliminated at the outer end, life of the positive bean is greatly increased. Wear on the tapered tube is exceedingly slow.



Full information on the application of this choke in regard to flow-line freeezing problems may be obtained from the manufacturer.

Chain Hoists
COFFING HOIST COMPANY

A spur gear chain hoist of new design has been introduced by Coffing Hoist Company, Danville, Illinois. The hoist has an efficient gear system sealed in oil within a malleable iron housing. Load hooks are of new design. The chain is an electric-welded special alloy steel. Models are available in ½- to 3-ton capacities.

Transmission
THE NATIONAL SUPPLY COMPANY

The National Supply Company now presents the Type "DR" Transmission—a self-contained speed reducer for driving a rotary machine in connection with an internal combustion engine rotary rig drive. It is of the chain drive type and provides three selective speeds to the rotary table for drilling and coring, thus permitting the engines to be compounded and their speed maintained at a point most desirable for slush pump operation. The transmission is positioned between the draw works and the rotary machine, and is driven by the regular rotary drive of the draw works. This arrangement permits a low chain drive to the rotary machine, and as the "DR" Transmission is a compact unit, there is no interference with the racking of pipe in front of the draw works.

Smooth power engagements are provided by a double disc friction clutch. The foot pedal control of this clutch can be conveniently located at the driller's position.

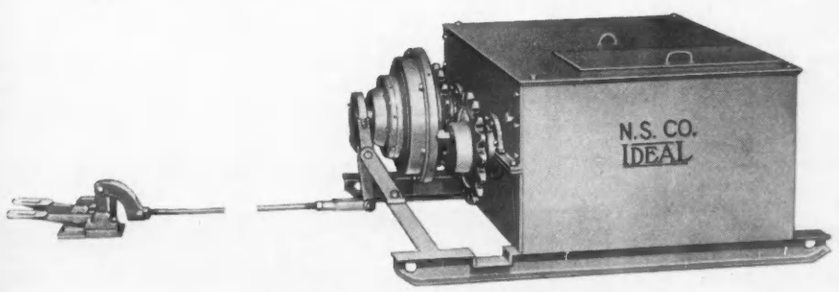
The input and output shafts are 5-3/16 and 5½ inches in diameter respectively and are mounted on self-aligning roller bearings. The chain drives have 1¾-inch pitch double strand chain and sprockets with machine-cut teeth. The jaw clutches for the three drives are operated by levers easily accessible through a door in the top of the housing. The input and output sprockets are for No. 3 A.P.I. chain and the former is bolted to the spider of the friction clutch and mounted on a roller bearing.

The transmission drives are completely enclosed in an oil-tight housing. Long life for the bearings, chains, sprockets and clutch shifter fingers is assured by an automatic lubrication system.

The Type "DR" Transmission has three speed ratios—2 to 1, 1.31 to 1 and 1.05 to 1, and has a 200-horsepower working capacity.

Weight Indicator
MARTIN-DECKER CORPORATION

Martin-Decker Corporation, Long Beach, California, has announced development of a new weight indicator especially designed for use in shallow drilling. This new instrument, known as the Slim-Hole Weight Indicator, has a capacity of 150,000 pounds with six lines, ample for the drilling loads encountered in shallow fields and in core testing work. Five interchangeable dials, calibrated in points on both sides (making 10 dials in all), give direct readings on all conventional string-ups and line sizes. The instrument accommodates all lines from ⅝ to 1¼ inches diameter. Readings are spread over 360 degrees of dial circumference, and



National "DR" Transmission

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HARD FORMATION HEAD (Interchangeable with Soft Formation Head)

REED 'B-R' Drill Collar and 3-Blade Drilling Bit with Core Barrel in position

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The LINE SCALE Packer Special

THIS Line Scale model weighs up to 100,000 lbs., and is designed for all tubing and packer setting work. Active and absolutely accurate at all times. Just look at the dial to read it. This scale is especially adapted to sucker rod pulling and may be used for drilling not exceeding 50,000 lbs.

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the large etched numerals insure full visibility from any part of the rig floor.

The case is made entirely of government specification bronze, and the diaphragm unit is an integral part of the

Martin-Decker Weight Indicator for Slim-Hole Drilling

case. This makes the instrument extremely compact and easily portable by eliminating all unnecessary weight. A newly designed "C" clamp has been incorporated that is self-adjusting, eliminating the use of shims when attaching the instrument to different sized lines.

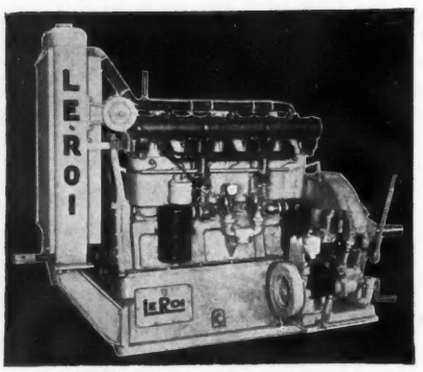
The Slim-Hole Weight Indicator is ruggedly built throughout to give long, trouble-free wear in all shallow drilling operation. It is accurate, extremely sensitive, and is factory tested, calibrated and sealed, ready for attachment to the deadline. It requires no attention of any kind while in use on the rig.

Engine

LE ROI COMPANY

Le Roi Company, Milwaukee, Wisconsin, recently added to its line of heavy duty drilling engines, a new 6 cylinder 5½x7-inch unit designated as model RA2S.

The RA2S, because of its six cylinder construction, is unusually smooth and flexible and is ideally suited to high-speed drilling in medium depth



Le Roi Model RA2S Engine

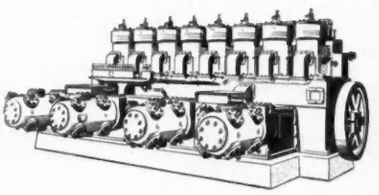
fields. It is built with easily accessible overhead valves and an extra deep rigid crankcase. It is available with equipment to burn gasoline, natural gas or butane.

With the addition of this model, Le Roi drilling engines are now available in five sizes wth a range of 65 to 418 horsepower. Bulletin DE4 describes the complete line.

Angle Compressor

CLARK BROS. COMPANY

Clark Bros. Company of Olean, New York, announces that its right-angle compressor, built heretofore in 2-, 3-, 4-, 5-, and 6-cylinder sizes, is to be offered also in an 8-cylinder, 800 horsepower size. This larger size is offered

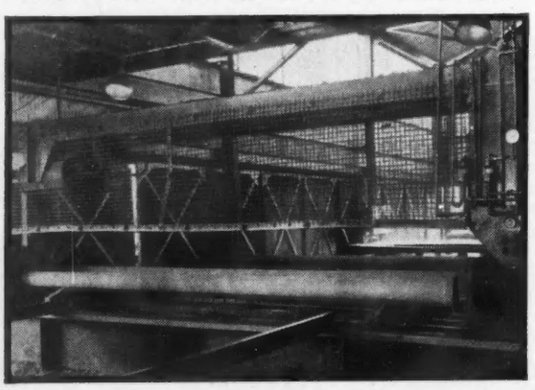


Clark Angle Compressor

especially to meet a demand of the larger natural gas companies. The 8-cylinder size, however, will be suitable for many types of service. It is stated that with the new 8-cylinder angle it will be possible to install a 3200-horsepower gas booster station in a floor space 24 x 105 feet.

MONO-CAST CENTRIFUGAL PIPE

Now Air-Tested At 100 Pounds



"ACIPCO" now subjects all pipe in sizes 16″ and under, intended for oil, gas or gasoline service, to a routine air-test up to 100 lbs. per sq. in., in addition to the long-established routine hydrostatic test. The accompanying photo shows the air-test press by means of which Mono-Cast Centrifugal Pipe are sealed at the ends by rubber gaskets, lowered into a tank of water, then tested with compressed air at any pressure up to 100 lbs. per sq. in. *while completely submerged.* This severe test is another of Acipco's pioneer developments designed to assure peak quality and performance of Acipco products in fields of super service. Write for literature.

AMERICAN CAST IRON PIPE CO.

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Do YOU want to cut pipe with less effort and less cutter wheel expense?

Then see the faster RIDGID with this Forged Blade Wheel

Profit from RIDGID economy in 1939!

NEW fast cutting that ends your burr problem—because this blade wheel is *thin.* Many more cuts per wheel—because it's forged from special tool steel. That's why the RIDGID Cutter saves you time, work and money. The steel reinforced cutter is warp-proof, always cuts true. You like the well-balanced feel of it, the easy spinning to size. Thousands of enthusiastic users will tell you it has no equal for speedy smooth low-cost pipe cutting. Four sizes for pipe up to (4) inches. Cost no more than old style cutters. Buy from your Supply House today.

THE RIDGE TOOL COMPANY, ELYRIA, OHIO

FAMOUS RIDGID PIPE WRENCHES
CUTTERS • THREADERS • VISES • EXTRACTORS

NOTES FOR THE Equipment Buyer and User

J. S. Warren Elected President of Maloney Tank Company

Maloney Tank Manufacturing Company, of Tulsa, has announced election of J. S. Warren as president, succeeding the late Harry Ross, who died at Long Beach, California, on April 9. Other officers elected were George J. Maloney, of Long Beach, vice president, and J. C. Highfill, of Tulsa, secretary.

Warren, who is a native of Kentucky, has been an executive of the company since 1914. He advances to president from vice president and treasurer. He will also continue as general manager of the company, a position he has held for many years.

J. S. WARREN

Hydril Representative Returns from World Tour

Allen S. Hicks, foreign representative of Hydril Company, has returned from a tour that carried him to many oil centers in Europe and the Far East. He spent the past week in Houston, while enroute to the firm's home office in Los Angeles.

Hicks visited London, The Hague, Paris, Bahrein Island, Arabia, India, Burma, Dutch East Indies, Iran, Iraq and other points on his trip.

The Edwin H. Fitler Company Completes New Plant Addition

The Edwin H. Fitler Company has just completed the erection of a modern office building as an addition to its main plant located at Tacony Street, Frankford, Philadelphia, on the New York Division of the Pennsylvania Railroad. Here, ample warehousing facilities together with its unusually fine strategic location allows rapid delivery service by truck, train and steamship.

This Philadelphia rope manufacturer is this year celebrating its 135 Anniversary.

Hewitt Rubber Corporation Enlarges Dallas Warehouse

Hewitt Rubber Corporation, Buffalo, announces the expansion of its Dallas, Texas, warehouse facilities, an additional 2500 square feet of floor space, making a total of 7500 square feet now in service.

Schwanhausser Appointed Vice President of Worthington

H. C. Beaver, president of Worthington Pump and Machinery Corporation, announces that Edwin J. Schwanhausser has been elected a vice president. Schwanhausser's connection with the corporation dates back to 1915, at the time of his graduation from Stevens Institute of Technology.

Assigned to the Harrison, New Jersey, Works, he served in a number of capacities, reaching the position of assistant works manager in 1927. In 1929 he was transferred to the Buffalo, New York, Works, as works manager, which position he now holds.

His duties at the Buffalo Works have been concerned with the development and manufacture of Diesel and gas engines, air, gas and refrigeration compressors, products of that works. As vice president and works manager he will continue in his present responsibilities.

W. Robert Timken Made Assistant to President

Announcement has just been made of the appointment of W. Robert Timken as assistant to the president of The Timken Roller Bearing Company. Since graduating from Harvard University, in 1933, he has been active in the office and factory, serving in various capacities throughout the plant. He will continue to maintain his headquarters in the general office at Canton, Ohio.

Calvin Drake Completes Gulf Coast Tour

Calvin Drake, salesman for Hydril Company, has returned to California after spending six weeks inspecting Gulf Coast operations.

Gordon F. Hess Moves to Houston for Republic Steel Corporation

Gordon F. Hess, formerly assistant manager of sales of the Alloy Steel Division of Republic Steel Corporation in Massillon, Ohio, has been appointed district sales manager of the Houston district, effective June 1, it was announced by N. J. Clarke, vice president in charge of sales.

Hess was born in Massillon, in 1894 and received his education in the public schools of that city. In 1917 he entered the steel business in the metal-

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The balanced mud treatment.

Reduces viscosity and gel strength of drilling muds

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in liquid and powder form:

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in powder form:

1. Correct the pH of both, too alkaline and too acid solutions
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in powder form:

Offsets the gelling effect of salt water

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Cro-Lay Working Barrels
Oversize Standing Valves

From the new O'Bannon Catalog Number 9, select the pump best suited to the particular conditions of your wells, and let the experience of a pioneer pump manufacturer help you produce them economically.

WALTER O'BANNON COMPANY
TULSA FORT WORTH

NOTES FOR THE Equipment Buyer and User

lurgical department of the Central Steel Company, which later went into Central Alloy and is today a part of Republic.

His first major promotion was to assistant superintendent of the heat treating and cold drawing department. Subsequently he became superintendent of that department and remained in that capacity until 1922 when he was transferred to the sales division.

In 1931 he was made assistant manager of sales of the Alloy Steel Division from which position he now goes to Houston.

Searle and Ramsey Elected New Worthington Directors

H. C. Beaver, president of Worthington Pump and Machinery Corporation, announces election of Clarence E. Searle, of Bronxville, New York, and Hobart C. Ramsey, of Short Hills, New Jersey, to the board of directors.

C. E. Searle has been associated with Worthington since 1932, when he joined the organization as vice president in charge of sales. In his early business career he was connected with the Western Electric Company of Chicago, the Fort Wayne Division of General Electric Company in Chicago, and for 24 years with Allis-Chalmers Manufacturing Company, Milwaukee, 17 years of which he held the position of general representative in charge of that company's sales organization.

H. C. Ramsey was educated at the United States Naval Academy, and served in the navy during the World War attaining the rank of lieutenant commander. He joined Worthington in 1920, entering the export department as sales engineer, later becoming manager of that department. In 1928 he was made assistant general sales manager. In 1930 he was elected vice president in charge of the corporation's international business, and in this position he spent a large part of his time abroad. His activities in recent years have been concerned with sales of equipment to the railroads, marine and oil refining industries, as well as exercising directional charge over Worthington's foreign associated companies, and the export division.

In 1937 he was placed in general administrative charge of operations, which position he now holds.

Gilbert Leach to Represent McEvoy Company in Louisiana

Gilbert Leach has been appointed Louisiana representative for McEvoy Company. He was formerly sales representative for Universal Engineering Company in the Gulf Coast. He will have his headquarters in Lake Charles.

Leach graduated from Rice Institute with a B. S. degree in chemical engineering in 1930, and immediately after joined the Gulf Research & Development Company in the laboratories in Pittsburgh, where he performed corrosion and testing work of an experimental nature. During the time he was in Pittsburgh he attended Carnegie Institute of Technology, taking special courses in metallurgy and metallography. In January, 1932, he returned to Houston and after several months roughneck experience joined Stanley Gill, consulting engineer. In June, 1934, he went with Universal Engineering Company.

GILBERT LEACH

Naylor Pipe Company Names Western Representative

Naylor Pipe Company of Chicago announces the appointment of Gene McIntyre, 727 West Seventh, Los Angeles, as the Naylor Lockseam Spiralweld Pipe representative in California and Arizona. McIntyre has been associated with the petroleum and mining industries for many years in the Mid-Continent and Southwestern fields.

Cutler-Hammer Executive Dies at Milwaukee

W. C. Stevens, 55, who since 1930 was vice-president in charge of engineering, secretary and director of Cutler-Hammer, Inc., Milwaukee, Wisconsin, died May 15.

After graduating from Cornell University in 1906 with a degree in mechanical engineering, Stevens began his career with Cutler-Hammer in the engineering department at Milwaukee. The following year he was transferred to the Pittsburgh sales office. From 1910 to 1912 he was associated with the sales department at Milwaukee and in 1913 was made district manager of the Western division, Chicago. A year later he became Eastern district manager with offices in New York. In 1917 he

NOTES FOR THE Equipment Buyer and User

returned to Milwaukee as general sales manager, an office he directed until 1924 when he was placed in charge of the development department. He held the latter office six years and was then appointed to the executive position he filled until his death.

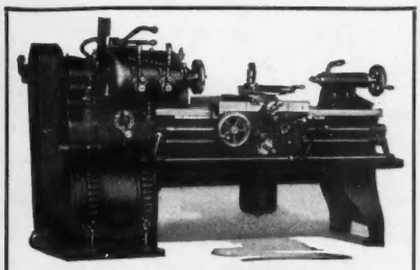
Stevens had a Fellowship with the American Institute of Electrical Engineers. Since 1930 he was also a director of Globe Union, Inc., Milwaukee, Wisconsin.

Pipe Machines

New Deal Specialty Company, Okmulgee, Oklahoma, has issued a new 1939 catalog covering changes, improvements and new models in Pipe Cleaning and Pipe Straightening Machines. The catalog also includes information on the company's new "P-G" Wire Line Shock Absorber for cable tool derricks and drilling machines.

Gas Lift

National Supply Company, Toledo, Ohio, has published Bulletin No. 240 on the Ideal intermitting gas-lift assembly.



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- Fewer pulls for replacement.
- Insure more fluid lift economy.

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TULSA

McKissick Products Company Names Export Representative

McKissick Products Company announces the appointment of A. V. Simonson, with offices at 149 Broadway, New York, as exclusive export representative. Simonson is acquainted with most of the foreign operators as well as the representatives of these operators in New York. He will handle export business to all countries outside the United States.

Guiberson Corporation Official Completes Trip to Illinois Area

H. M. Haseltine, assistant to the president of The Guiberson Corporation, has just returned to his office in Dallas, following an eastern trip during which he made a survey of general conditions and sales prospects in the Illinois, Michigan and Pennsylvania oil fields.

Alloy Tubes

The Babcock & Wilcox Tube Company, Beaver Falls, Pa., has issued Technical Bulletin No. 12, "Condensed Technical Data on High-Temperature Steels," containing information and technical data on B&W Seamless Alloy Tubes and Pipe for High-Pressure and High-Temperature services. Curves and a complete tabulation give: Analysis, applications, minimum physical properties, creep strength, short-time tensile strength, oxidation resistance, corrosion resistance, temper embrittlement, working qualities, and approximate relative cost for 15 different materials.

The bulletin may be had by making request on company letterhead or by otherwise giving company connection.

"Tanker Freight Rates and Tankship Building"

De Erven F. Bohn, N.V., Haarlem, Holland, announces publication of the 1939 edition of "Tanker Freight Rates and Tankship Building," by Dr. T. Koopmans.

This book, consisting of over 220 pages, is an analysis of cyclical fluctuations and is replete with tables and charts. It is publication No. 27 of the Netherlands Economic Institute.

Part 1 of the publication deals with structural growth of the tanker trade, distribution of the world tanker fleet according to flag and according to type of ownership, parties in the tanker freight market, types of charter, and tanker trade as an isolated market.

Part 2 has chapters devoted to such subjects as rates of voyage charter and time charter, price formation under conditions of pure competition, the demand side of the market, the supply side, tanker rates in periods of prosperity, rates in times of depression, and the effect of the Tanker Pool on rates.

Part 3 covers factors determining tankship building and the prospects of the Tanker Pool.

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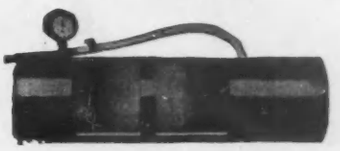

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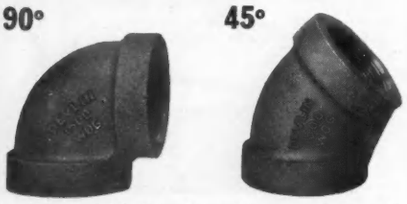

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Squeaks from the Bull Wheel

Finesse

"How do you make such a hit in society?"

"Well, you see, I mistake all the debutantes for society leaders, and all the society leaders for debutantes."

Creatures of Habit

City Guest—"Well, goodnight. I hope I haven't kept you up too late."

Farmer Host—"Not at all. Not at all. I'd have been getting up any time now."

Double Value for His Money

Sambo spent a large slice of his week's pay for a 30-minute flight in an airplane.

When he got his feet on the ground again, he said to the pilot:

"Ah shuah got mah money's worth on both dem rides."

"What do you mean?" asked the aviator. "You've been up once and had only one ride."

"No, suh, boss," protested the passenger. "Ah had two rides—mah fust and mah last."

A Good Start

"Mother, I must have some money for a new dress. Will you ask Daddy for it?"

"Ask him yourself, dear. You are getting married in a month's time and you must have some practice."

A Change o'Kirk

A minister confided to his old friend that he was considering an invitation to another parish at a marked increase in salary.

"What I do not know for sure," he said, "is that this is really a call."

"Call, dominie? It's a command!"

Incriminating Evidence

Father—"Who broke that chair in the parlor last evening?"

Daughter—"It just collapsed, all of a sudden, father, but neither one of us was hurt."

Emphatic

What would I have to give you for one little kiss?

Chloroform.

Addict

Did you read about the fellow who beat his wife with a golf stick?

No; how many strokes?

Uncalled For?

Well, Jackie, how do you like your new little sister?

Oh, she's all right. But there are lots of things we needed worse.

Probably an Anarchist

"You can't see Mr. Smith," retorted the sharp-faced, sharp-tongued woman to the political canvasser at the door.

"But, Madam, I merely wish to find out what party he belongs to."

"Well, then, take a good look at me. I'm the party he belongs to."

Must Be

"Isn't this an ideal place for a picnic?"

"Yes! Fifty million insects couldn't be wrong."

Wasted

"Is she very pretty?"

"Pretty? Say, when she gets on a street car the advertising is a total loss."

Idea

"I shall leave all my property to my wife on condition that she marries within a year."

"Why do you say that?"

"I want somebody to be sorry I died."

Destructive

"Henry, you know that unbreakable toy you gave Johnny for a present?"

"Don't say that he's managed to break it."

"Oh, no, but he's broken nearly everything else in the house with it."

Grindstone Dust

"But, dear, I am late for dinner because I have had my nose to the grindstone all day."

"Well, you had better get a grindstone that doesn't leave face powder, rouge, and lipstick all over you."

"PETROLEUM COMES OF AGE"

by

ALBERT A. LAWRENCE, Professor of General Studies, United States Coast Guard Academy.

The book grew out of the celebration held in Cuba, New York, in July, 1927, and commemorating the tercentenary of the discovery of oil in America. A running history of petroleum is chronicled by the author.

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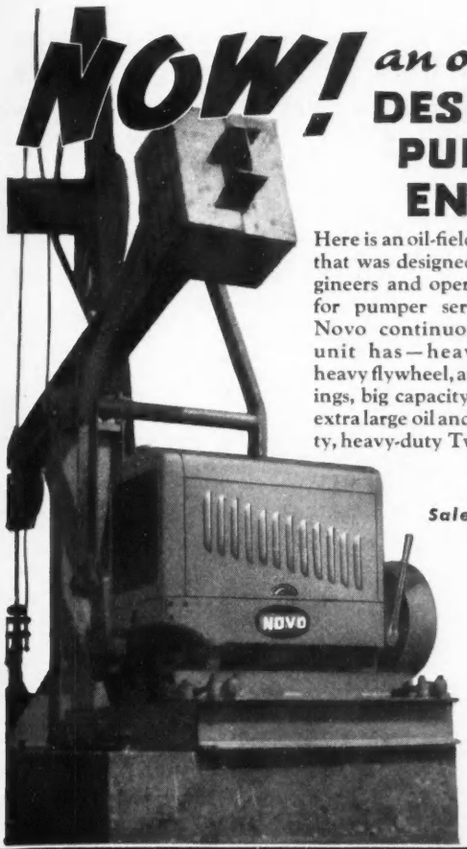

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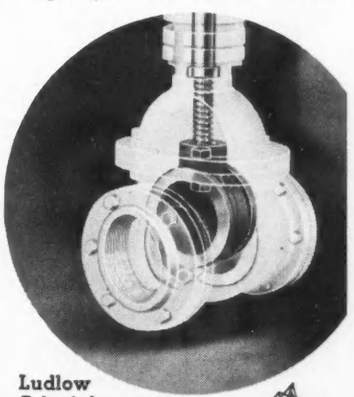

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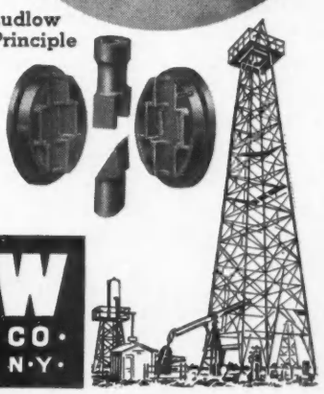

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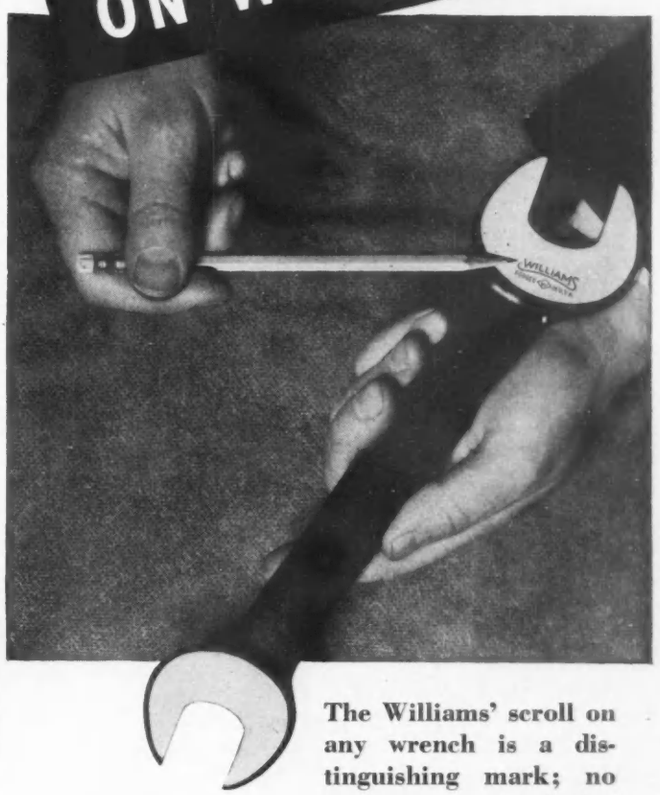

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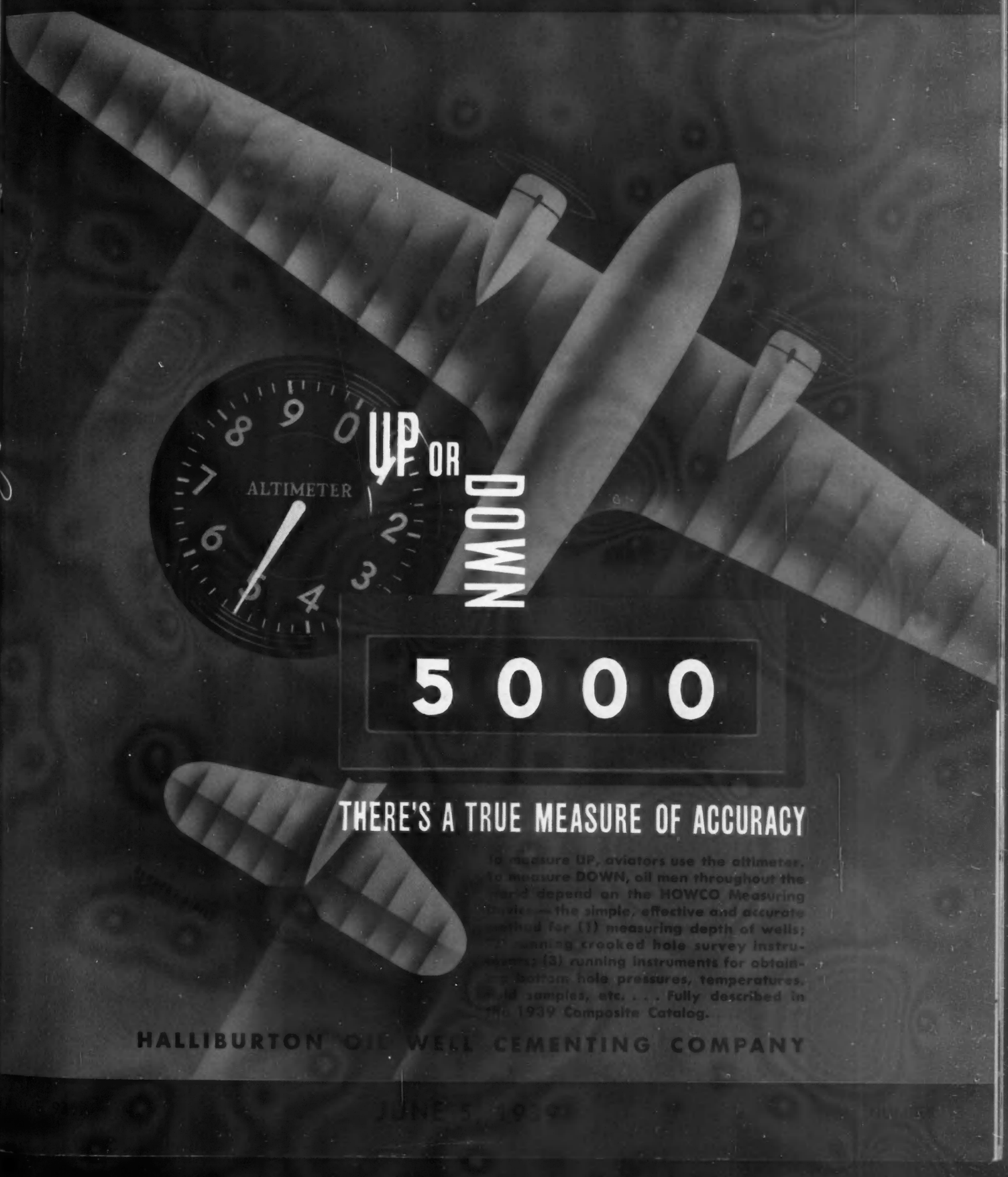
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THERE'S A TRUE MEASURE OF ACCURACY
HALLIBURTON OIL WELL CEMENTING COMPANY

WHETHER DRILLING OR STRINGING TRU·LAY *Preformed* IS BETTER

●When it's drilling—TRU-LAY Preformed works fast and long. It returns the idle block in double-quick time, makes faster round-trips regardless of load. It resists whipping and so spools perfectly.

When being strung TRU-LAY Preformed doesn't fight the men on the deck. It resists kinking, threads readily through the traveling block, crown block and eye in the drum, handles easily. Being preformed it is a safe rope to handle.

Drillers in every field are more and more turning to TRU-LAY Preformed for safe, dependable uniform service. Get a TRU-LAY Preformed line on your rig, too. It will give you greater dollar value.

BUY ACCO QUALITY *whether for American Cable Wire Lines—American Welded and Weldless Chain—Ford Chain Blocks—Page Chain Link Fence—Page Welding Wire—Reading-Pratt & Cady Valves—or any of the other 137 ACCO Industrial Products.*

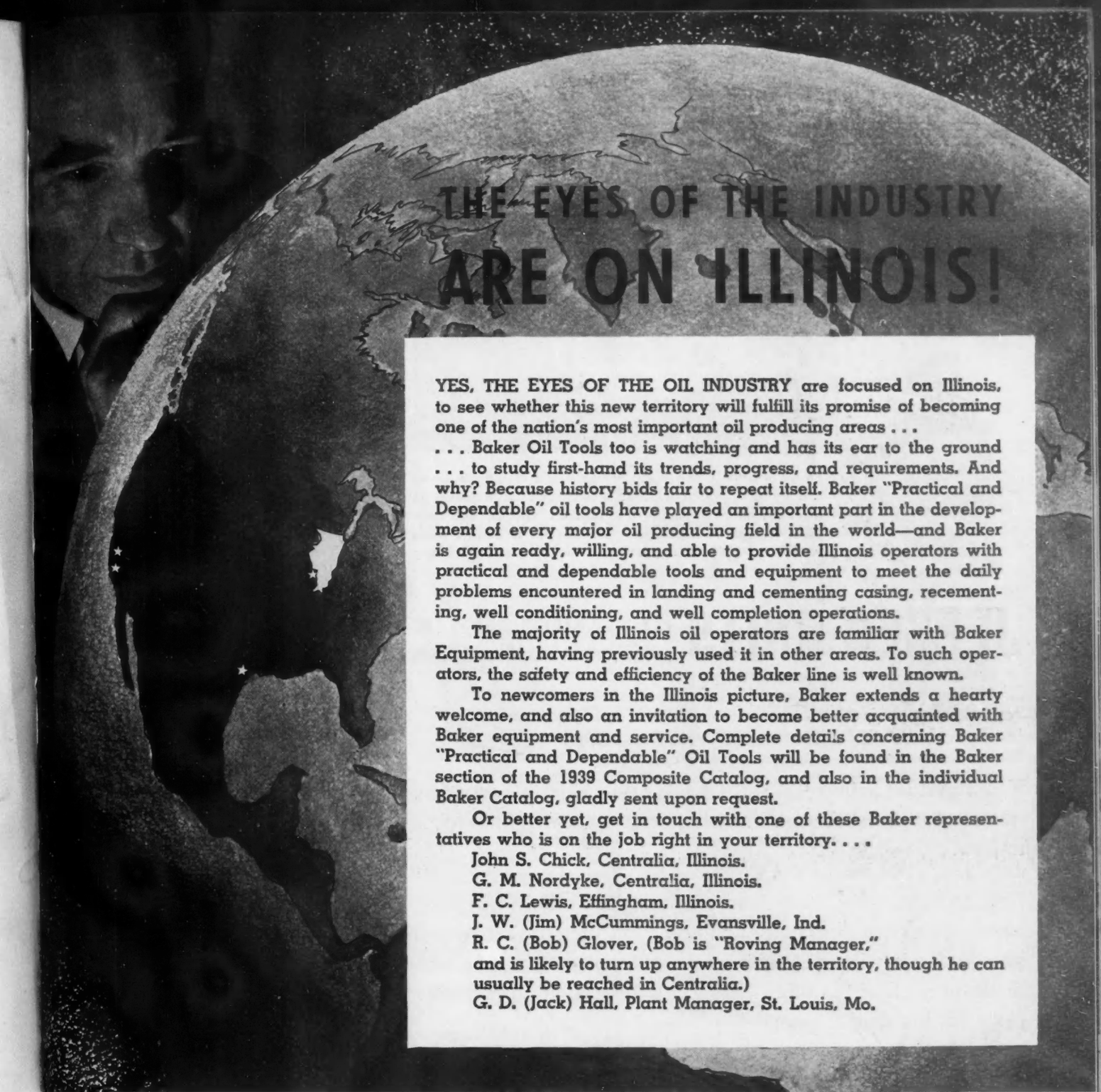
AMERICAN CABLE DIVISION
WILKES-BARRE, PENNSYLVANIA
Branches or Distributors in All Oil Field Centers

See Our Exhibit, Metals Building, New York World's Fair

GREEN SIGNALS FOR SAFETY

Write today for this free booklet. You'll find it both constructive and helpful.

AMERICAN CHAIN & CABLE COMPANY, Inc.



THE EYES OF THE INDUSTRY ARE ON ILLINOIS!

YES, THE EYES OF THE OIL INDUSTRY are focused on Illinois, to see whether this new territory will fulfill its promise of becoming one of the nation's most important oil producing areas . . .

. . . Baker Oil Tools too is watching and has its ear to the ground . . . to study first-hand its trends, progress, and requirements. And why? Because history bids fair to repeat itself. Baker "Practical and Dependable" oil tools have played an important part in the development of every major oil producing field in the world—and Baker is again ready, willing, and able to provide Illinois operators with practical and dependable tools and equipment to meet the daily problems encountered in landing and cementing casing, recementing, well conditioning, and well completion operations.

The majority of Illinois oil operators are familiar with Baker Equipment, having previously used it in other areas. To such operators, the safety and efficiency of the Baker line is well known.

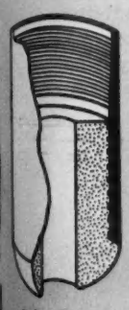
To newcomers in the Illinois picture, Baker extends a hearty welcome, and also an invitation to become better acquainted with Baker equipment and service. Complete details concerning Baker "Practical and Dependable" Oil Tools will be found in the Baker section of the 1939 Composite Catalog, and also in the individual Baker Catalog, gladly sent upon request.

Or better yet, get in touch with one of these Baker representatives who is on the job right in your territory. . . .

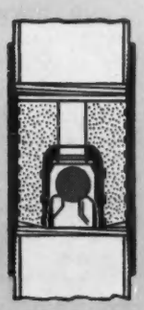
John S. Chick, Centralia, Illinois.
G. M. Nordyke, Centralia, Illinois.
F. C. Lewis, Effingham, Illinois.
J. W. (Jim) McCummings, Evansville, Ind.
R. C. (Bob) Glover, (Bob is "Roving Manager," and is likely to turn up anywhere in the territory, though he can usually be reached in Centralia.)
G. D. (Jack) Hall, Plant Manager, St. Louis, Mo.

★*Manufacturing Plants, Baker Oil Tools, Inc.*—Coalinga and Huntington Park, California; Houston, Texas; St. Louis, Missouri

BAKER OIL TOOLS, INC., P. O. BOX 71, HUNTINGTON PARK, CALIF.

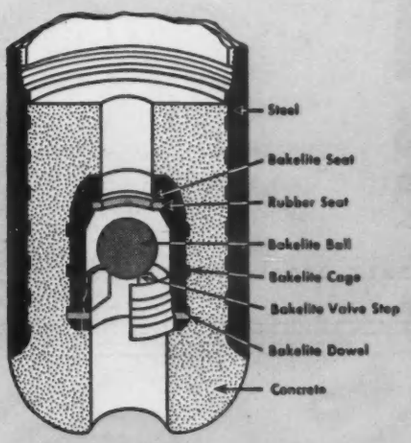


Baker Cement Guide Casing Shoe

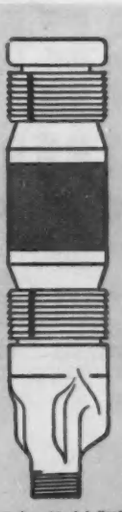


Baker Cement Float Collar

Baker Cement Wash-Down Whirler Float Shoe

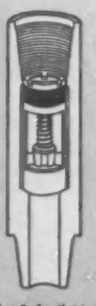


Baker Cement Float Shoe

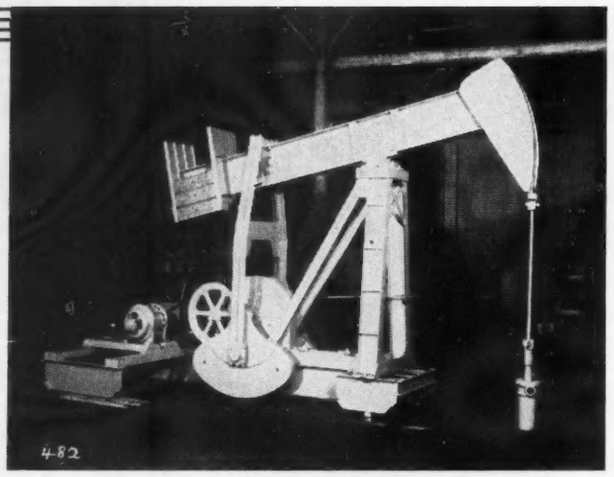


Baker Model "K" Cement Retainer

Baker Cement Whirler Float Collar with Solid Bottom Baffle, with Metal "Petal" Basket



Baker Bakwik Model "B" Drill Pipe Float



New style cranks and crank weights add to the ease and accuracy with which a JENSEN Unit can be adjusted to balance your well. Note the JENSEN special sub-base (optional). Our units are made in ten sizes to handle wells from 500' to 6000' with unparalleled economy and efficiency.

JENSEN UNITS are also saving money for producers in the Illinois Basin

The only way to out-smart the law of supply and demand is to produce oil for less money than the other fellow.

You can do it with a JENSEN Unit. It's being done every day all over the Illinois Basin. It's being done wherever oil refuses to flow.

Producers satisfied with less efficient, less stubbornly durable equipment are simply sleeping on their rights. When you find out what JENSEN Units will do for you, it's like discovering that the other fellow has been getting a higher price for his crude.

It's good business to keep abreast. See your JENSEN Dealer or wire us at Coffeyville.

JENSEN BROTHERS MANUFACTURING CO.
Coffeyville, Kansas, U. S. A.

EXPORT OFFICE: 136 LIBERTY STREET, NEW YORK CITY, U.S.A.

LOOKING AHEAD

WITH THE EDITOR

"Operating Practices Reduce Smackover Lift Costs"

TALK about your pumping problems. How would you like this assignment: Take a field where you've got 1700 wells producing 17,000 barrels of oil and 500,000 barrels of fluid daily, all by means of the pump, and keep it out of the red ink section of the ledger. And then, to add insult to injury, just figure that many of those 10-barrel wells have to lift 1000 barrels of water to get the oil.

That's the situation the men at Smackover face. But some of them are meeting it by modernization of equipment and methods in a manner that makes the leases show profit.

How are they doing it? Well, that's what the ninth of a series of pumping articles currently being published in THE OIL WEEKLY will tell you next week. It's titled "Operating Practices Reduce Smackover Lift Costs."

The article goes into changes made in the use of pumps, rods, tubing and surface equipment, the use of combination cups and rings on traveling valves, combination rod strings. Care and maintenance of rod strings, as practiced at Smackover, is discussed, as is the practice of installing air relief valves to eliminate surging and pounding.

Where you have to run from 28 to 34 strokes of 62 inches to lift 1500 barrels of fluid daily through small tubing, you have a set-up calculated to wear out equipment in a hurry, yet a constant study of the wells and of loads, strokes, vacuum requirements, electrolytic corrosion, and submergence on some Smackover leases has held replacement costs remarkably low, relatively speaking.

The OIL WEEKLY, Published every Monday. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.

No wonder they all like *Performance Proved*

SUPERINTENDENT
"Wire Line Maintenance Costs Going Down? S-W-E-L-L! That means you're using Macwhyte PREformed . . ."

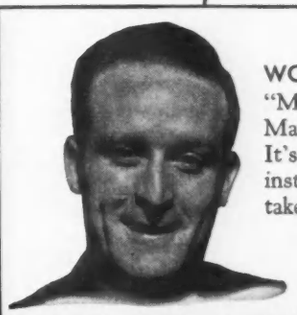
PURCHASING AGENT
"I buy on the basis of quality and service . . . That's why I buy Macwhyte PREformed."

MACWHYTE PREformed

FOREMAN
"We've speeded up our production schedule since we started using Macwhyte PREformed . . . fewer shutdowns for replacements now."

(P. S. Have you Tried This Laboratory Tested, Field Proved, BETTER Wire Line?)

FEWER REPLACEMENTS . . .
BETTER OPERATION . . .
SAVINGS IN MAINTENANCE . . .
SPEEDED-UP PRODUCTION . . .
all are possible when you buy high quality wire line*



WORKMAN
"Me? I like to work with Macwhyte PREformed. It's easy to handle and install . . . and it sure can take it!"

Macwhyte wire line, famous for its long life and low cost, is better today than ever before!

LONG SERVICE

Macwhyte steels are better today . . . laboratory tests are more exact . . . workmen are more skilled and experienced . . . field tests are constantly proving and improving the right line for the specific job.

Yes, you're assured of economical service from Macwhyte wire lines.

AT LOWER COST

And you get it at lower cost, too. For example, the famous special Macwhyte internal lubrication protects Macwhyte lines from corrosion, makes them easy to handle, cuts down internal friction . . . which naturally increases service life . . . lowers cost.

LESS WEAR ON MACHINERY

In addition, the special PREformed construction allows the line to run smoothly, easily over sheaves and drums . . . with a minimum of wear on the machine and the line.

Is it any wonder that there are more Macwhyte users today than ever before?

**There is no better wire line than Macwhyte PREformed*

These distributors will give you quick service:

Baldwin Supply Co., Charleston, W. Va.
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Carson Machine & Supply Co., Oklahoma City, Okla. Oil Field Points; Lyons, Kan.
Centralia Pipe & Supply Co., Centralia, Ill.
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The Federal Supply & Machine Co., Winfield, Kansas
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International Derrick & Equipment Company, Columbus, Ohio Oil Field Points; Calif., Ill., Ind., Kan., Okla., Texas
Johnson Supply Co., Denver, Colo.
L. L. Morris Supply, Glasgow, Beattyville, Ky.
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WIRE LINES

MACWHYTE COMPANY
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San Francisco
(Distributors throughout the oil fields.)

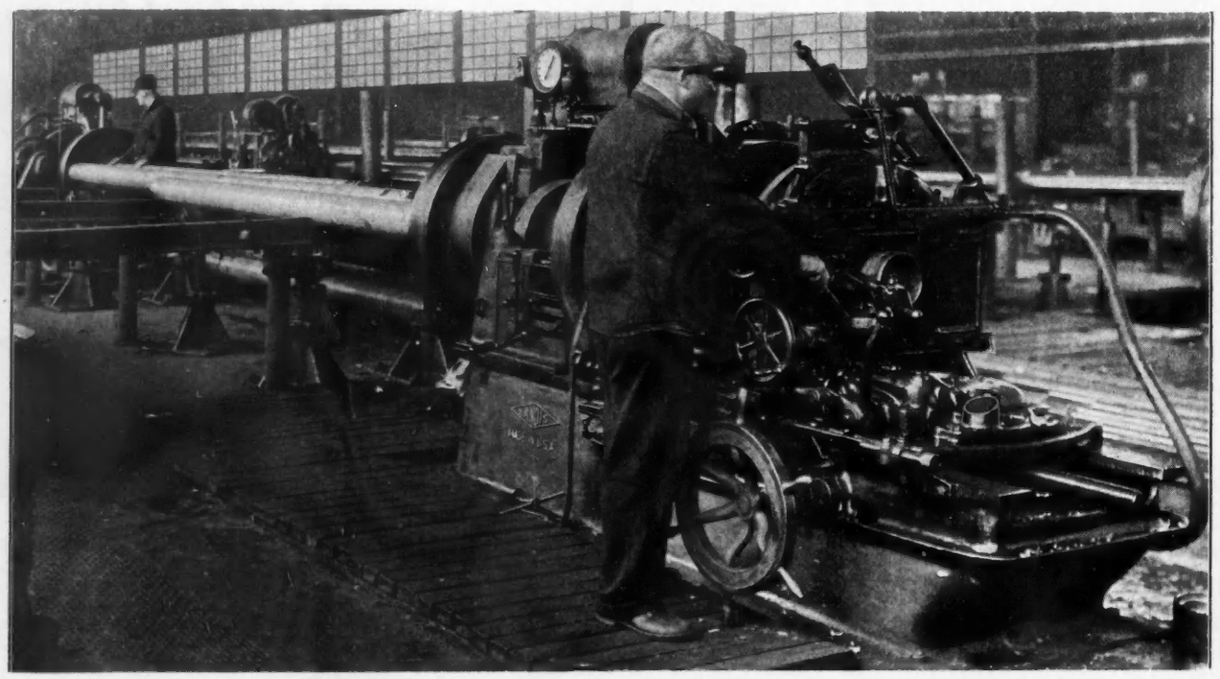
NO 413-B

Casing, Tubing, and Drill Pipe (API) Threads Must be Accurate

LANDIS Tube Mill Machines

with Receding Chaser Die Heads

maintain higher standards of Accuracy and increase Production



The LANDIS Pipe Machine with the Receding Chaser Die Head is used with great success by many of the leading manufacturers of Casing, Tubing, and Drill Pipe.

The close tolerances of oil well tubular goods threads presents a difficult threading problem. The tubes have little preparation for the threading operation, and the threads must pass an extremely rigid inspection. In spite of these adverse conditions LANDIS Receding Chaser Pipe Machines operate efficiently and economically and average 100 to 230 tubes per 8-hour shift.

Results comparable to the above are also obtainable in the field, but these results must be attributed to the perfection of design and assembly of the LANDIS Receding Chaser Pipe Machine and to the efficiency of the LANDIS Tangential Chaser.

The same care and precision used in building LANDIS Receding Chaser Pipe Machines is exercised in building the entire LANDIS line.

Investigate LANDIS Equipment for All threading operations. Write us today.

LANDIS MACHINE COMPANY, Inc.

Waynesboro, Penna.

STANDARD

CHECKED

AND DOUBLE CHECKED

FOR CORRECT THREAD FORM

PITCH-DEPTH-TAPER

insure faster, tighter make-up in the field, the threads of
ry length of "Standard Seamless" are minutely and
ntifically checked with special instruments for measuring
ry thread element—a rigid and uncompromising inspec-
n which guarantees the outstanding performance for which
ndard Seamless" is noted throughout the oil fields.

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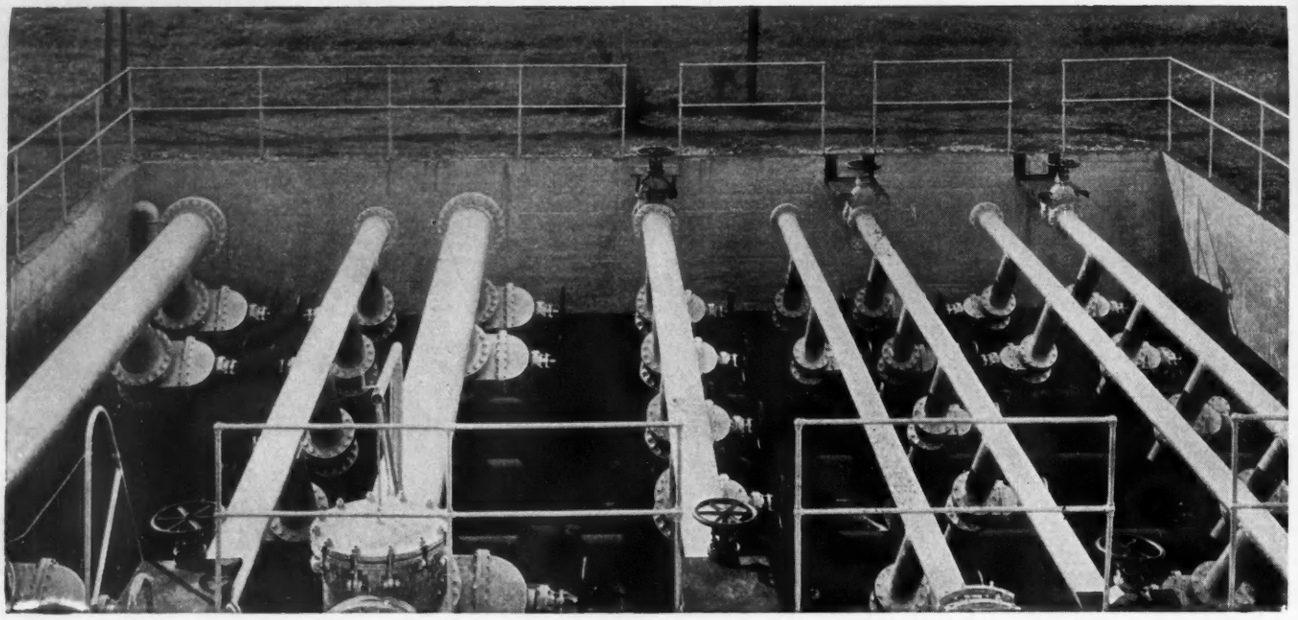
GENERAL OFFICES: GRANT BUILDING, PITTSBURGH, PA.

Offices: Boston, New York, Philadelphia, Pittsburgh, Atlanta,
St. Louis, Tulsa, Houston, Denver, San Francisco, Los Angeles

STANDARD

SEAMLESS

CASING · DRILL PIPE · LINE PIPE · TUBING



Built right FOR THE

RIGHT KIND OF SERVICE

A Darling Gate Valve installation may be the remedy for *your* particular valve troubles. Each Darling Gate Valve design represents the *solution* of many valve problems; in other words, your own problems have very likely been encountered and solved already by Darling designers and builders. In pipe line, refinery and field—Darling users have learned the wisdom of *buying the best to save the most.*

Trouble-free service means economy. Darling Valves assure this *right* kind of service. You can *depend* on Darlings for economical performance over a long period of time. For your next valve installations—

SPECIFY DARLINGS!

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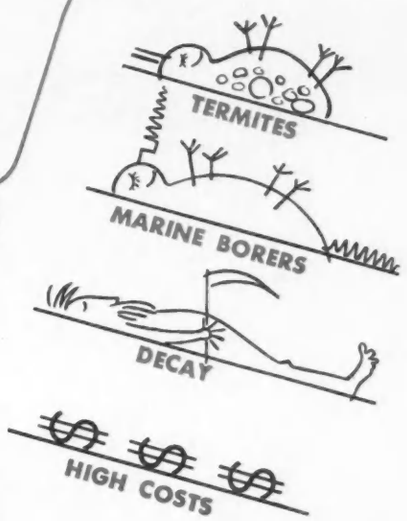
McJunkin Supply Co., Charleston, W. Va.

DARLING
GATE VALVES

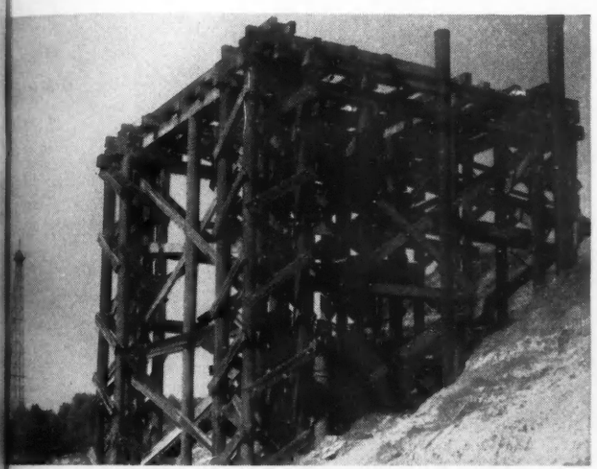
1. LOADING DOCKS, FLOORING and other types of marine structures used in the production and transportation of oil are built of pressure-creosoted timber. Pressure-creosoted timber resists impact, stands up under heavy mechanical wear and severe weather exposures.

2. PILING of pressure-creosoted timber frequently outlasts the producing period of the field. The natural taper of the timber helps to give a firm foundation in soft ground. Pressure-creosoted piles are quickly placed. They eliminate the need for replacements.

PRESSURE-TREATED TIMBER IS YOUR DEFENSE AGAINST



and gives you the added advantages of **RAPID INSTALLATION**



3. SUBSTRUCTURES of pressure-creosoted timber provide enduring support for derrick rigs and tanks. The durability and easy erection of such structures, particularly in swampy or submerged Gulf Coast territory, prevent costly delays in erection and maintenance.

4. HOUSES, FIELD OFFICE BUILDINGS and other similar structures built of pressure-treated creosoted timber may be moved from one location to another or salvaged for later use. Maintenance is reduced to a minimum. Freedom from the attacks of termites, marine borers and other destructive forces give them long life.

OTHER USES FOR PRESSURE-TREATED TIMBER: BINS . . . SHEDS . . . FLUMES . . . CULVERTS . . . POLES AND POSTS . . . WALKWAYS . . . TRESTLES . . . WAREHOUSES . . . SERVICE STATIONS . . . PIPE RACKS . . . PLATFORMS

OTHER KOPPERS PRODUCTS: AMERICAN HAMMERED PISTON RINGS . . . FAST'S COUPLINGS . . . PHENOLATE HYDROGEN SULFIDE RECOVERY SYSTEMS . . . TANKS . . . ROOFING . . . WATERPROOFING . . . KOPPERS AND MICHIGAN VALVES AND GATES

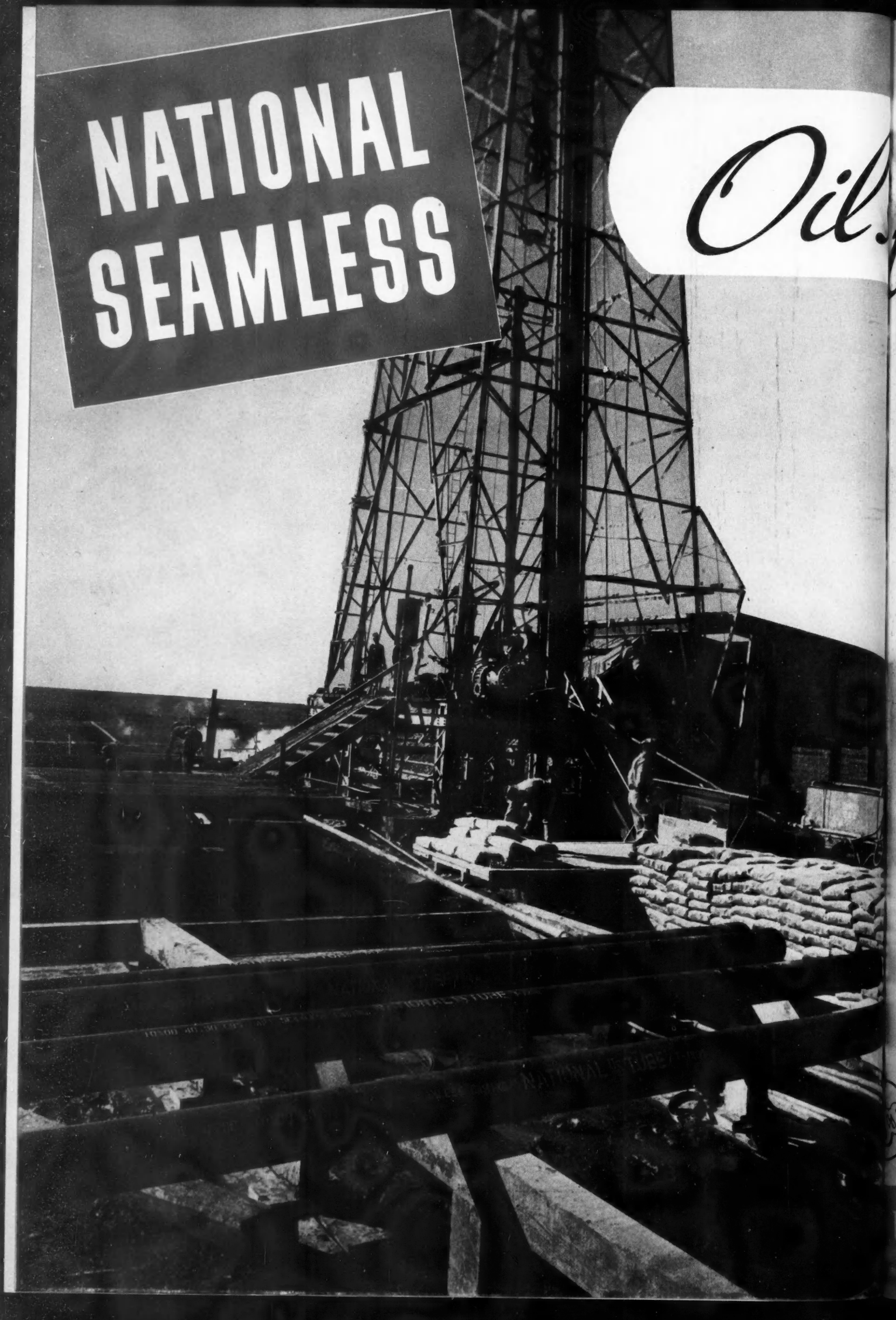
THE WOOD PRESERVING CORPORATION

PITTSBURGH, PA.

NATIONAL DIVISION

Texarkana, Ark.-Tex. Houston, Tex. Denver, Colo.

a **KOPPERS** subsidiary


NATIONAL
SEAMLESS
Oil

first choice for

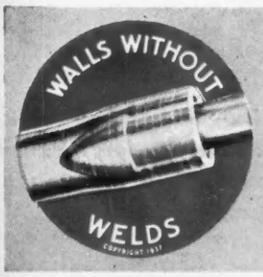
TOUGH JOBS!

OIL men in increasing numbers agree that NATIONAL Seamless is "tops" for tough jobs. And this means wherever holes are unusually deep, pressures abnormally high, and strata particularly hard to penetrate—NATIONAL Seamless Drill Pipe, Casing, and Tubing are first choice. This preference has been hard-earned.

Records on file tell how NATIONAL Seamless Drill Pipe produces thousands of feet of hole in the world's deepest wells with smooth, dependable performance . . . how NATIONAL Seamless Casing withstands terrific subterranean pressures . . . how NATIONAL Seamless Tubing's fatigue and wear-resisting characteristics protect profits when the well goes on the pump.

No wonder oil men breathe easier when their investments are guarded by NATIONAL Seamless. For NATIONAL Seamless means "Walls Without Welds"—pierced from a solid billet of highest-quality steel. In NATIONAL Seamless there is no line of potential weakness—each tube is a perfectly formed steel cylinder, with full wall strength at every point.

If you are not already using NATIONAL Seamless Drill Pipe, Casing, and Tubing, call in a representative of National Tube and get first-hand a full picture of the advantages of standardizing on NATIONAL Seamless for the complete well job. Send for Bulletin No. 15.



NATIONAL SEAMLESS means pierced from solid billets of the finest quality steel. Only sound and flawless steel can be used for piercing, since any existing defects cannot be covered up in this process. A thorough system of inspections and tests at every stage in production gives you double assurance that each length of NATIONAL *Seamless will display the same uniform wall strength, dimensional accuracy, and uniformity in all physical properties.*

OUTSTANDING SEAMLESS DEVELOPMENTS

PIONEERED BY NATIONAL TUBE

- Seamless Drill Pipe
- Seamless Upset Tubing
- Seamless Long Threads and Couplings
- Seamless Grade "D" Casing*
- Seamless High Tensile Couplings
- Seamless with Rounded Form of Thread
- Seamless with Electro-Galvanized Threads and Couplings
- Seamless Normalized Tubing for Corrosive Conditions
- Seamless Cement Lined Casing and Tubing

To be sure of getting the newest, most up-to-date improvements in Drill Pipe, Casing, and Tubing, always specify NATIONAL Seamless. NATIONAL's policy is to bring you finer, stronger tubular goods, and bring them to you FIRST!

* NATIONAL Seamless Casing is available in sizes up to 24" O.D., the only *seamless* casing larger than 16" O.D.

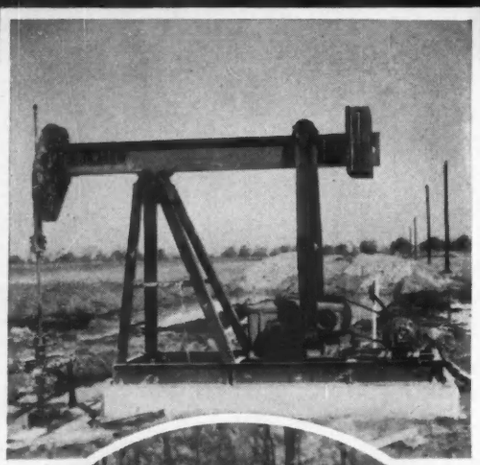
NATIONAL TUBE COMPANY

PITTSBURGH, PA.

United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

THEY "do it Electrically" IN ILLINOIS!



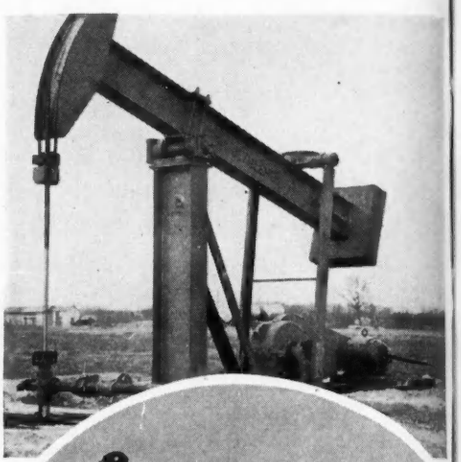
ECONOMIES AND ADVANTAGES OF ELECTRIC PUMPING UTILIZED IN THIS NEW, ACTIVE OIL FIELD

Such important advantages as easier control, greater flexibility, low initial and operating costs, make it easy to understand why electrically driven pumping rigs are so popular in the newly developed Illinois field.

Add to these basic advantages the features of Westinghouse equipment — and you can understand *its* widespread popularity. For instance, Westinghouse motors start under heavy loads, even in sub-zero weather. Their sturdy, splash-proof construction, with sealed sleeve bearings, Tuffernell moisture-resisting insulation, cast-iron frames, brackets and conduit boxes, resists the toughest conditions.

So it goes through the complete line of Westinghouse equipment for the oil industry. Designed to meet your specific needs, Westinghouse products give you more value, dollar for dollar. And Westinghouse engineers, located near every oil field, are ready to help you get maximum returns from your investments in power equipment.

For quick service, call the local office. Or, write Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. Address Dept. 7-N.



Typical Westinghouse pumping applications, in the Illinois field, are shown in the accompanying photographs.

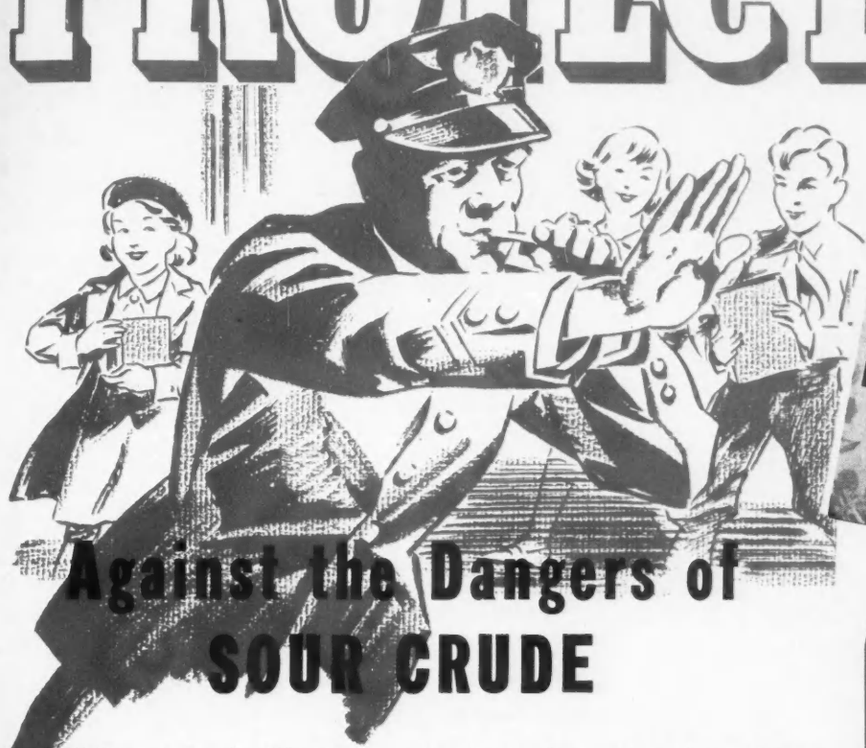
J-94085

Westinghouse

WESTINGHOUSE ELECTRIC

ELECTRICAL PARTNER OF THE PETROLEUM INDUSTRY

PROTECTION



Against the Dangers of SOUR CRUDE

COP-NIC protects the life of your storage tanks against the ruthless destructiveness of sour crude . . . assures you perfect storage of this hard-to-handle crude.

AND HERE'S WHY: COP-NIC steel with its special galvanized coating makes Columbian Bolted Steel Tanks highly resistant to corrosive action and perfect for use in sour crude districts. The sheets from which these tanks are made are of selected base material. An exclusive galvanizing process is used to put on a heavy coating of zinc spelter which is applied in such a manner as to become virtually a part of the steel itself, minimizing the possibility of any pitting or loosening of the coating.

The unusual results obtained with these COP-NIC Galvanized Tanks are attributed to the process used in preparation of the sheets, of the coating, and the manner of fabrication which does not destroy or render ineffective the galvanized coating.

Protect your tank investment with Columbian COP-NIC Tanks. Write today for free Columbian Tank Catalog giving complete information about COP-NIC Tanks.

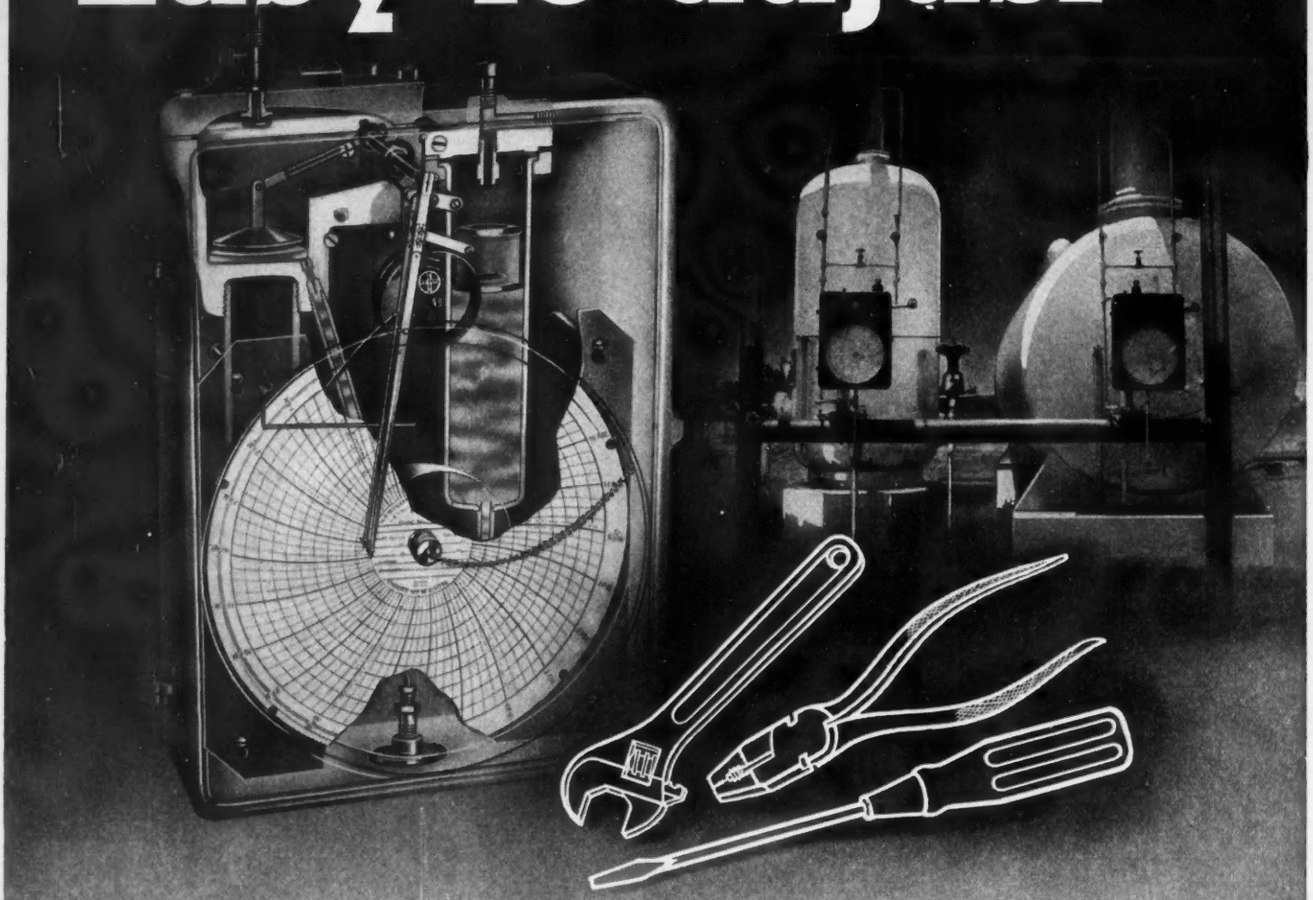
COLUMBIAN STEEL TANK COMPANY
P. O. BOX F-4226 KANSAS CITY, MO.

COLUMBIAN COP-NIC GALVANIZED BOLTED STEEL TANKS

Built Especially for Storing Sour Crude Last Longer in Ordinary Service

(Right) A Battery of Columbian Cop-Nic Tanks in a Sour Crude District.

Easy to adjust



out in the field

LET'S SEE HOW EASY it is to adjust a Westcott Orifice Meter! The door of the dust-and-moisture-proof aluminum case merely is swung open . . . exposing pressure spring, clock, chart, and recording mechanism. Or, by speedily removing the low-pressure chamber cover of the forged-steel differential gage body, the entire interior is accessible . . . without loosening a single connection that affects accuracy. Adjustments do not interfere with any of the working parts . . . few in number and simple in design, despite their many features and refinements.

Comprehensive literature describes the expense-saving Westcott Orifice Meters and Flowmeters . . . clearly defines their applications. Specifications on the popular new Round Case Indicating Flowmeters also will be mailed on request.

AMERICAN METER CO MEASUREMENT ENGINEERS

343

AMERICAN METER COMPANY
INCORPORATED
Measurement and control of Gas, Oil, Steam, Air and Liquids
METRIC METAL WORKS *ERIE, PENNSYLVANIA*

ALL THE POWER ALL THE TIME

New fields bring new problems. Whether you are drilling in Illinois, Texas, California or elsewhere, choose the *proven* chain—Baldwin.

There are 3 Baldwin Rotary Chains, each designed to meet certain requirements. See them at the right. The line also includes any number of single and multiple strand standard roller chains which will assure that you deliver *all* your power *all* the time to jackshaft, pump or other equipment.

You are always safe with Baldwin.

BALDWIN-DUCKWORTH CHAIN CORP.

Factories at SPRINGFIELD *and* WORCESTER, MASS.

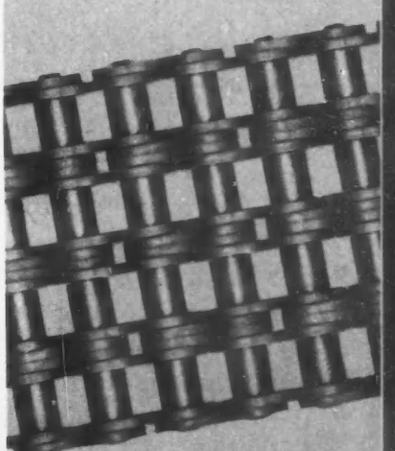
Factory Representative: GEO. J. FIX, Dallas, Texas

FOR SALE IN ALL OIL FIELDS

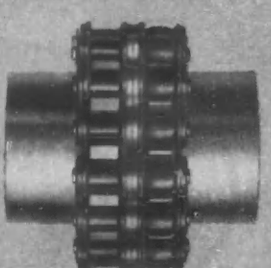
BALDWIN MASTER
1244-SS—185,000 lbs.

BALDWIN SUPER SERVICE
1030-SS— 66,000 lbs.
1240-SS—140,000 lbs.

BALDWIN FULL FLEX
SS-3— 43,000 lbs.
SS-4—100,000 lbs.



BALDWIN MULTIPLE ROLLER CHAINS FOR DRIVES UP TO 500 H. P.



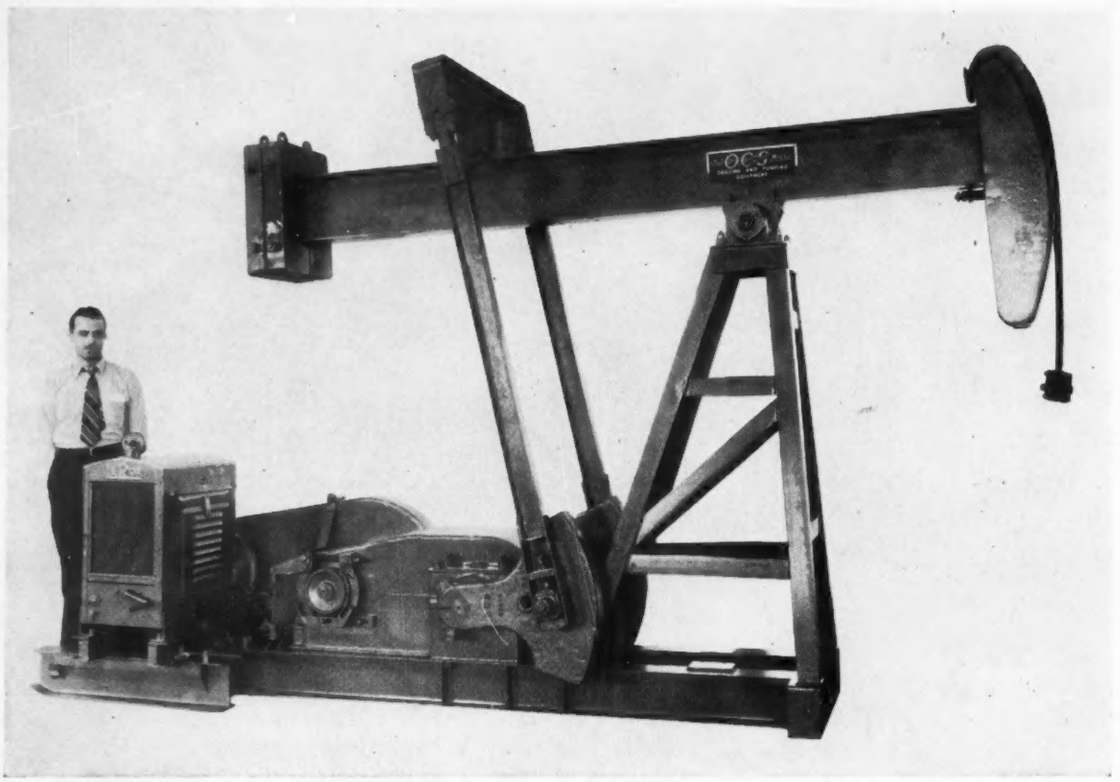
BALDWIN ROLLER CHAIN FLEXIBLE COUPLINGS

BALDWIN

Ask the Driller .. He Knows

Illinois Gets Quality

as Well as Price



In the O C S 5 H. P. Pumping Unit

DOUBLE REDUCTION

Features:

- 5- 10.2 Horse Power
- Polish Rod Load 10,000 lbs.
- Stroke 25", 34"
- Self-Aligning Weatherproof Beam Bearings
- For High or Slow Speeds
- For Electric Motor or Multi-Cylinder Engines
- Same Lubrication the Year Round
- Weight (Less Beam Weights) 4,000 lbs.
- With Timken Roller Bearings
- Diamond Roller Chain

This 5 h.p. double reduction Pumping Unit is particularly adaptable to production in the Illinois area, as well as to other areas having comparable well loads. It is identical in design, with all parts machined with the same accuracy and the same quality as the larger size O C S units up to 100 horse power.

The one difference in principle of this unit is that it is provided with both a centrifugal and beam balance, consequently the advantages of both are derived. This machine makes the unit pumping of oil wells competitive with powers. It also gives the added advantage of individual well operation which, production men agree, produces greatest recovery. Pumping each well at the speed and stroke that produces the most oil gives this machine a decided advantage over central pumping plants.
For lighter wells, a bell crank may be provided for handling one or two extra wells.

The efficiency of roller bearings and roller chains provides this unit with the highest efficiency of any pumping unit and assures low power cost, particularly when electric power is purchased.

Write for Bulletin No. 107

OCS

THE OIL COUNTRY SPECIALTIES MFG. CO.

COFFEYVILLE, KANSAS

LONG BEACH, CALIF. HOUSTON, TEXAS

Sales representatives at all active points in Mid-Continent field and Warehouse at Salem, Illinois, Phone 5741

Let PETRECO DETERMINE THESE Important FACTS FOR YOU

- Are you losing money through the production and handling of emulsified crude?
- Are gravity and volume losses materially reducing your total revenue?
- Is your investment in storage tanks increased due to corrosion, tank bottoms, and reduced oil storage capacity?
- Are higher viscosity and pressures due to cut oil increasing your pumping and maintenance costs?
- Are shipping costs increased by the reduced oil carrying capacities of pipe lines and oil tankers, due to the water content of your crude?

In numerous ways emulsified crude is costing the petroleum industry millions of dollars annually. The producing, pipe line, marine, and refining departments of every oil company producing and handling emulsified crude, all are paying their full share of this cost. A portion of the losses accruing to these various departments are intangible, and difficult to determine, and therefore, overlooked or disregarded. Yet it is important that each department know whether or not such losses exist, and their extent.

The Petreco Advisory Service was inaugurated to assist operators in such matters. Petreco engineers and facilities are available to you at all times for this purpose. They will prove of immeasurable value to producers, pipe line and marine operators, and refiners handling emulsified crude. Preliminary investigations involve no cost or obligation. Your inquiries are invited.

PETROLEUM RECTIFYING COMPANY OF CALIFORNIA
General Offices: 530 West Sixth Street, Los Angeles, California
Gulf Coast Headquarters: Houston, Texas
Representatives in Principal Oil Fields and Refining Centers

OWNERS OF THE
PETRECO
Electro matic
DEHYDRATION and DE-SALTING PROCESSES

Another record for the SPERRY-SUN H-K SINGLE SHOT

One of the crews who operated the H-K Single Shot at Woodlawn

FIVE MONTHS *in continuous service* Without Repairs or Replacements . . . . . and STILL GOING!

196 pictures in over 46,000 feet! No repairs—no replacements! It sounds like a derrick man's dream—but it's the actual performance record of an H-K Single Shot instrument used in the Union Sulphur Company's development at Woodlawn, La. And as this is written, the same instrument is still going strong!

No kid-glove handling helped to make this record possible, either. The instrument was handled by twenty different men. The company has had two rigs in the field constantly, and the instrument was transported from one to the other in a small truck, taking the rough with the smooth.

Rented on a daily basis, the Sperry-Sun H-K Clinograph is reasonable in operating cost. Plan to use it on your next drilling operation!

HERE'S THE RECORD:

Name of Well	Depth in feet
Racca No. 1	8911
Calcasieu Bank No. 1	8905
Thomas No. 1	9552
Miller No. 2 (still drilling)	9111
Donovan O'Connor No. 1 (still drilling)	8159
Donovan O'Connor No. 2 (side-tracked hole)	2283
TOTAL DEPTH	46,921

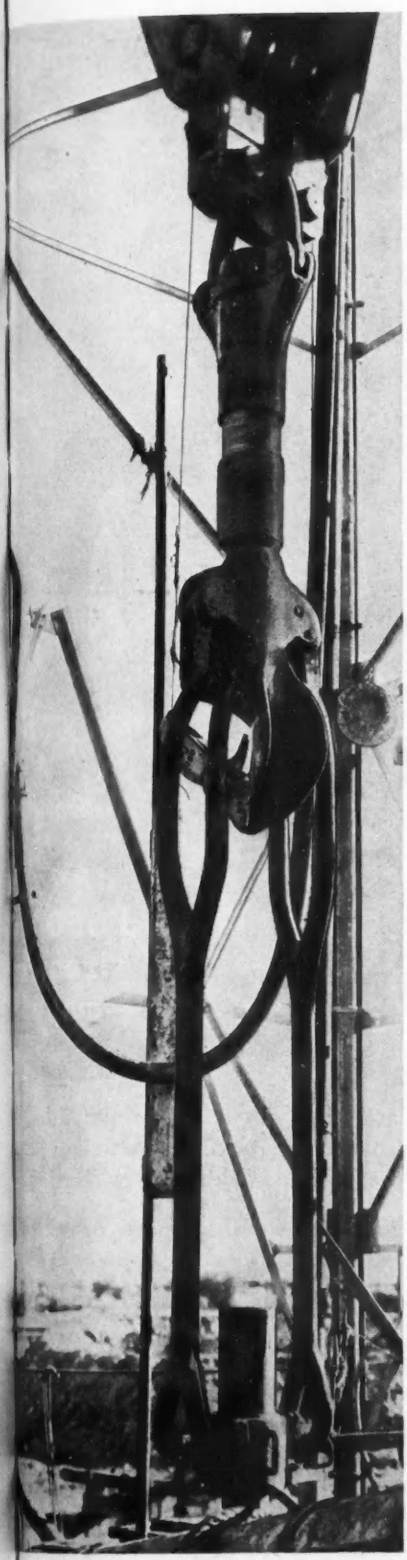
The SPERRY-SUN H-K Self-Checking Single Shot

SPERRY-SUN WELL SURVEYING COMPANY

1608 Walnut Street, Philadelphia, Pa.

Tulsa, Oklahoma, 425 Petroleum Bldg. · Houston, Texas, 3118 Blodgett Ave. · Long Beach, Calif. 549 E. Bixby Road (3800 Block—Atlantic Ave.) · Bakersfield, Calif. c/o Elks Club 17th and I Streets · Lafayette, La. Bonnet Building Cor. Lafayette & W. Vermillion Sts. · Corpus Christi, Texas 332 N. Morningside Drive · Santa Barbara, Calif. 1409 E. Valley Road

THEY SEEM TO BE "Made to Order" FOR ILLINOIS OPERATORS



The two BJ TRIPLEX HOOKS illustrated—the "100" at left and the "50" at right—are perfectly suited for Illinois drilling programs. For carrying loads up to 100 tons the BJ 100 TRIPLEX HOOK is recommended. The BJ 50 TRIPLEX HOOK possesses all the features of safety and efficiency of larger sizes, and handles 50-ton loads. All TRIPLEX HOOKS have a factor of safety of 3.

BJ Type A Center Latch ELEVATORS are outstanding for use with either hook. By equipping the "100" with 2¼" x 84" BJ WELDLESS LINKS, and the "50" with the 1¾" x 72" size, ample load carrying capacity is present, and maximum ease of operation of both elevator and hook is assured.

BJ LIGHT WEIGHT ROTARY TONGS

This modern tong for lighter rotary work is adaptable for shallow rig operations such as encountered in Illinois. It is light in weight, with a short lever for use where floor space is limited yet is strong and fast in operation. Made in 2⅜" and 2⅞" sizes only, and priced substantially lower than tongs for heavy duty service.

BJ

BYRON JACKSON CO.

Houston • LOS ANGELES • New York

BJ DRILLING TOOLS

Ideal for RECYCLING, REPRESSURING *and* PIPE LINE *Service*

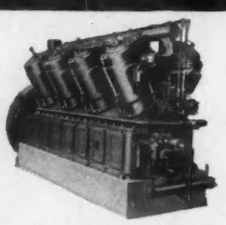
485 and 650 hp sizes 4-cycle

THE "LVG" GAS-POWERED COMPRESSOR

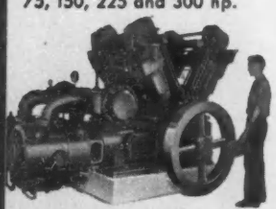
- Only two compressor frames on each size unit . . . simplifies inlet, di charge and interstage piping and manifolding . . . only two stuffing box to maintain . . . compressor frames cast integral with engine housing.
- 4-cycle economy and reliability . . . ideal for variable speed operation . extreme accessibility for easy maintenance.
- Separate, easily removable power cylinders . . . removable wet-type lin . . . overhead valves and camshaft.
- All auxiliary drives, including governor, built-in circulating water pu and auxiliary power take-off are driven from flywheel end of shaft — n from the free end. All wearing parts completely enclosed.
- Only 14′ x 17′ for floor space for the 650 hp. unit. (The well-known 300 h Type XVG requires 11′ x 14′ 8″). Comparatively light in weight . . . lo cost of transportation, handling and installation.
- The LVG is conservatively rated for continuous full load service — hours a day.

OMPRESSORS—ENGINES—PUMPS
for the petroleum industry

XVG GAS POWERED COMPRESSOR
75, 150, 225 and 300 hp.



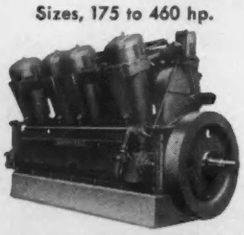
PVG GAS ENGINE
185, 275 and 370 hp.



XVO DIESEL POWERED COMPRESSOR
Four sizes, 60 to 240 hp.

TYPE S, CONVERTIBLE GAS-DIESEL ENGINE
Sizes, 175 to 460 hp.

RT PIPE LINE PUMPS
r modern pressures, any type of drive



PLVG GAS ENGINE

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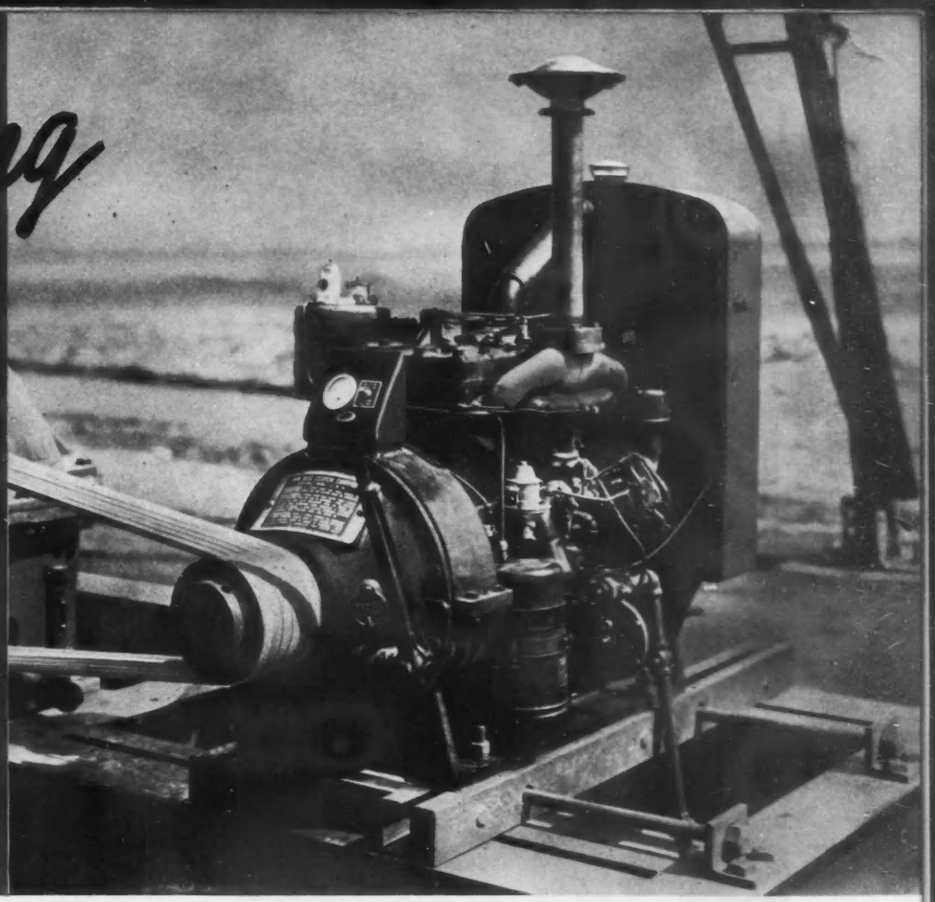
Washington

Announcing

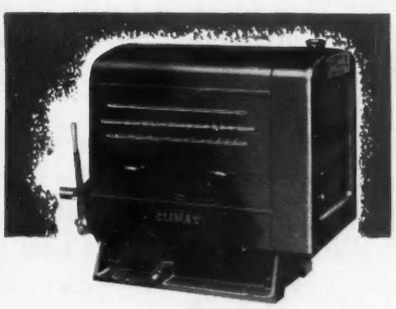
AN ADDITION to the family of CLIMAX Blue Streak ENGINES



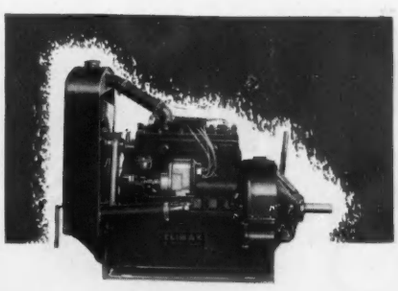
. . . The "C" Series for Pumping Service

with Pumping Type Flywheels

61-133-186
cubic inches displacement



Model C-133 4-cylinder
Closed Type Power Unit



Model C-186 4-cylinder
Open Type Power Unit

Now the advantages of a smooth pumping cycle and really economical operation can be had in a small size pumping engine.

Climax Blue Streak's new Type "C" Series are expressly designed for pumping service on light wells. Their box base construction combats vibration commonly found in this size engine and also provides an extra large oil sump. A large radiator keeps water temperatures cool and with inbuilt safety devices the engine may be operated unattended on twenty-four hour service.

Your Continental representative will gladly furnish complete specifications and aid in making a proper selection from the Climax line. Every comparison in price, features and performance will convince you of Climax Blue Streak's superiority.

THE CONTINENTAL SUPPLY COMPANY

General Offices: DALLAS, TEXAS
Export Office: CONTINENTAL EMSCO CO., Inc.
30 Rockefeller Plaza New York City, N. Y.
Representatives:
LONDON TRINIDAD MARACAIBO TAMPICO BUENOS AIRES

"SERVING THE OIL AND GAS INDUSTRIES"

CONTINENTAL

Fig. 511

Fig. 524

Look at any group of successful oil producers and you'll find many who—because they *had* to economize *then*—entered the oil business via the cable-tool route. In the lust for speed, many have abandoned the very method that first enabled them to succeed, even though it still remains both satisfactory and economical for a considerable share of today's drilling needs.

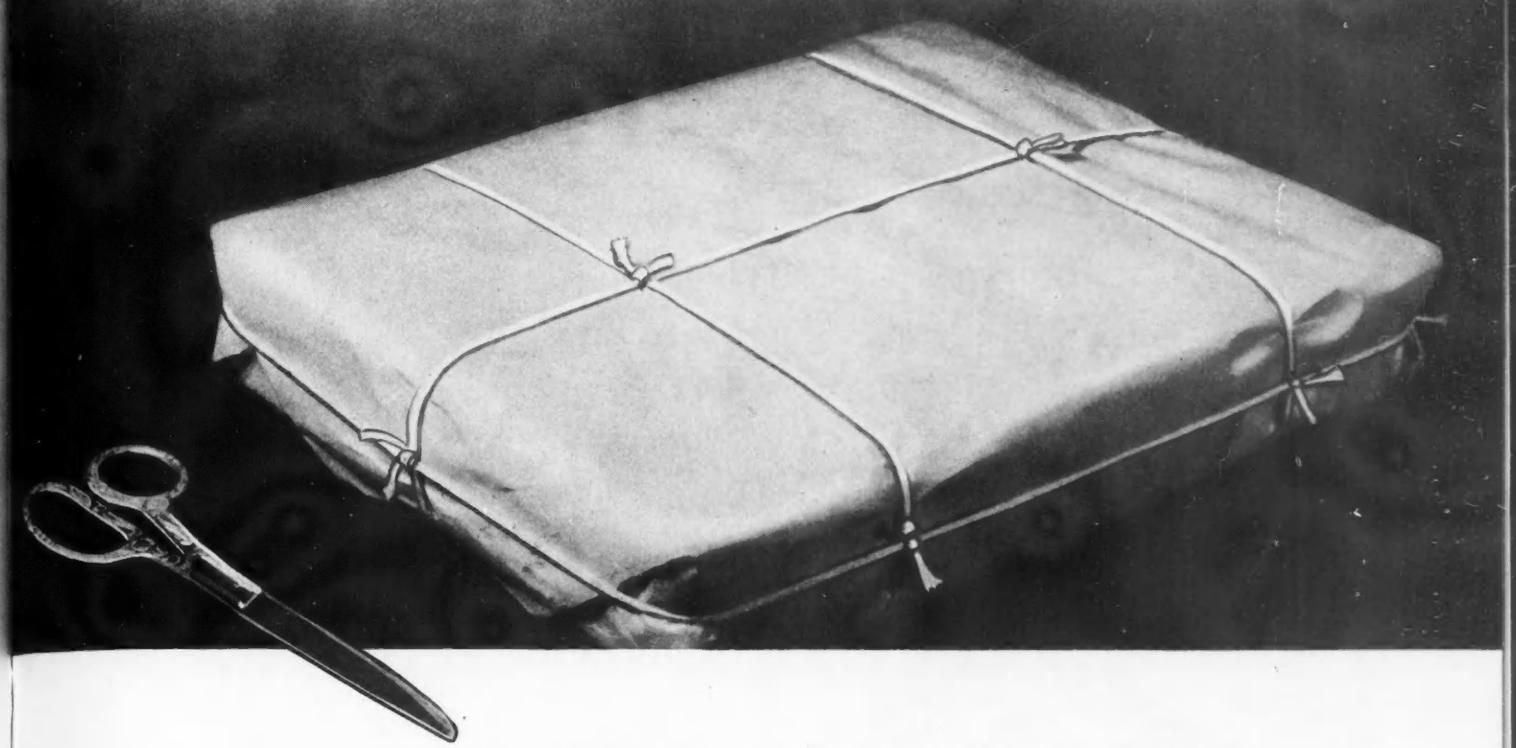
In drilling a well, the fundamental problem still remains one of economy. Analyze the location, the transportation facilities, the formations, the fuel and water supplies. Compare all costs *before* you drill. Then choose the drilling method that is best for each particular job. If it's the cable system, remember that Spang Cable Tools are the standard of comparison for good tools the world over.

SPANG CABLE TOOLS

The HIGHER STANDARD

SPANG AND COMPANY—BUTLER, PENNA.

HOW WOULD YOU OPEN THIS BUNDLE?



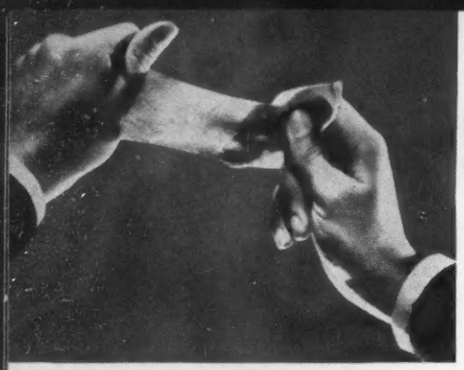
YOU WOULD CUT THE STRING, OF COURSE; it's the quickest, most certain way to accomplish the result. The same logic applies to removing stuck drill pipe, tubing, liners, and casing from your well.

Be sure to get the right cutter. If an external cutter is indicated—as for cutting off regular, external upset, or external flush drill pipe, or tubing of any size—specify the Baash-Ross drill pipe cutter described on pages 192 and 193 of the 1939 Composite Catalog. The Baash-Ross internal casing cutter, for cutting casing, liners, tubing and drill pipe is described on pages 194 and 195.

You'll find Baash-Ross pipe cutters are safe to run, smooth and positive in their cutting action, and effective in operation at any depth. For fifteen years they have served operators in the United States and abroad—unchanged in principle but kept constantly in step with modern practices. Order one out for your next cutting job.

BAASH-ROSS
DRILL PIPE AND CASING CUTTERS

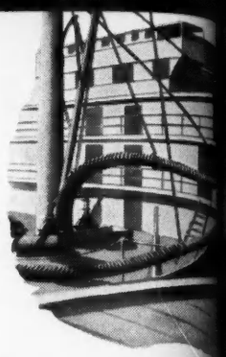
BAASH-ROSS TOOL COMPANY, 5512 Boyle Avenue, Los Angeles, Calif.
Houston · Oklahoma City · *Export Office:* 30 Rockefeller Plaza, New York City

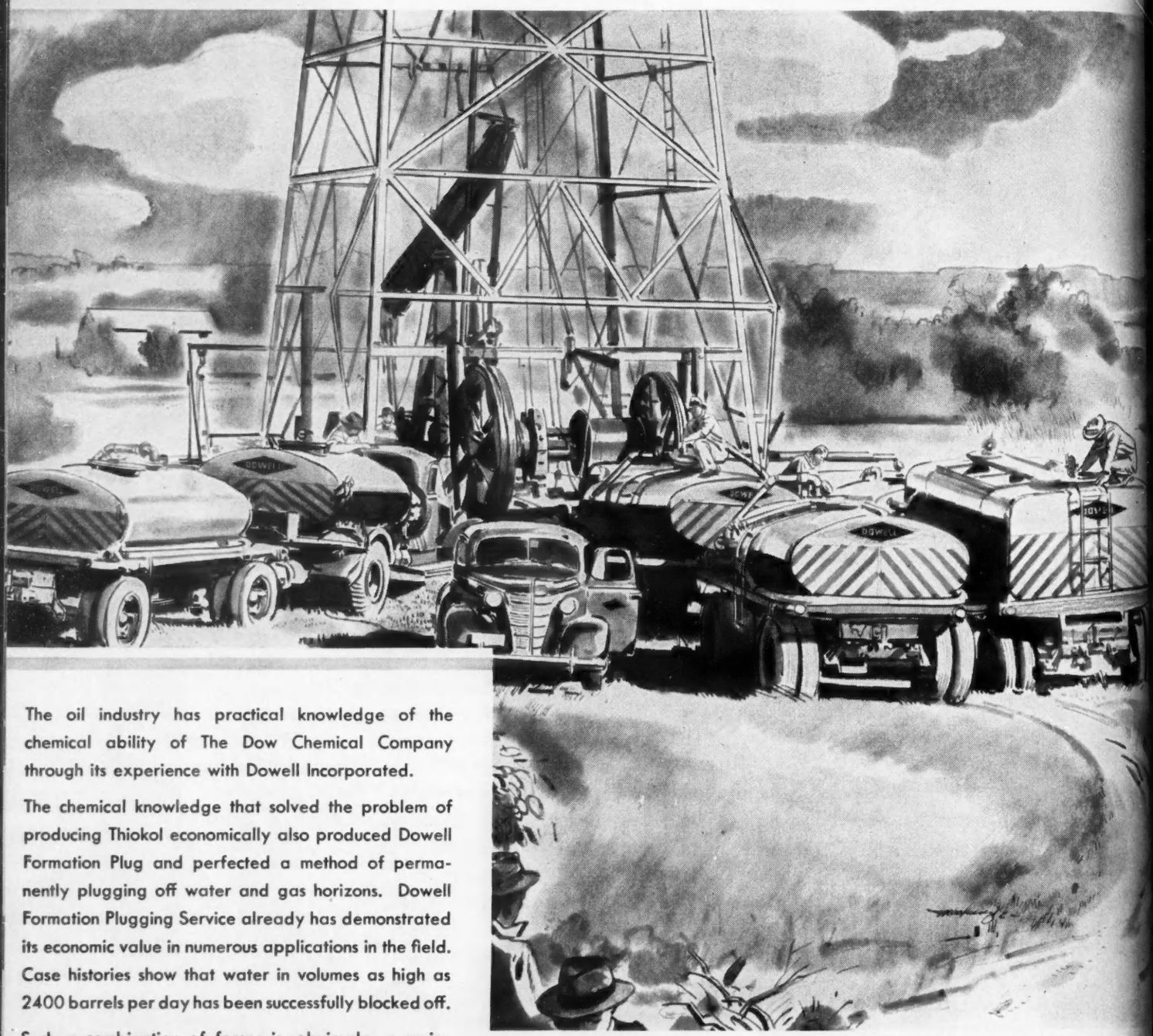


A NEW DEVELOPMENT for The Dow Chemical Company is the manufacture of "Thiokol," a synthetic rubber. This man-made rubber resists the action of oil, water, sunlight and air—the enemies of natural rubber.

Hose made of, or lined with, Thiokol is today widely used in the handling of petroleum products.

TRADE DOW MARK





The oil industry has practical knowledge of the chemical ability of The Dow Chemical Company through its experience with Dowell Incorporated.

The chemical knowledge that solved the problem of producing Thiokol economically also produced Dowell Formation Plug and perfected a method of permanently plugging off water and gas horizons. Dowell Formation Plugging Service already has demonstrated its economic value in numerous applications in the field. Case histories show that water in volumes as high as 2400 barrels per day has been successfully blocked off.

Such a combination of forces is, obviously, a major influence in the oil-producing industry. Already untold millions of dollars in additional recovery are credited to Dowell methods and materials. And what has been, and is being done, by Dowell is only an indication of what Dowell will do in the future.

DOWELL INCORPORATED

General Office: KENNEDY BUILDING, TULSA, OKLAHOMA

Subsidiary of THE DOW CHEMICAL COMPANY

Oil men who attend the Golden Gate International Exposition are cordially invited to visit the Dowell exhibit in The Dow Chemical Company Booth.

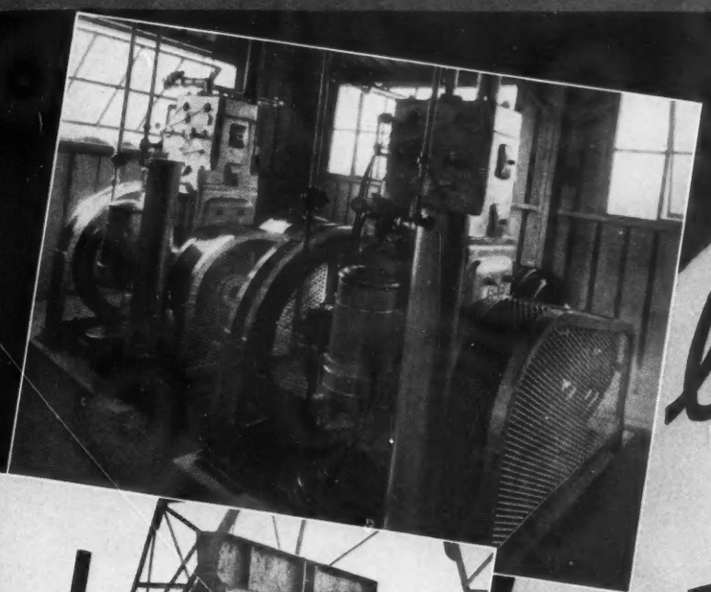
Look to

DOWELL

OIL AND GAS WELL

CHEMICAL SERVICE

ILLINOIS BASIN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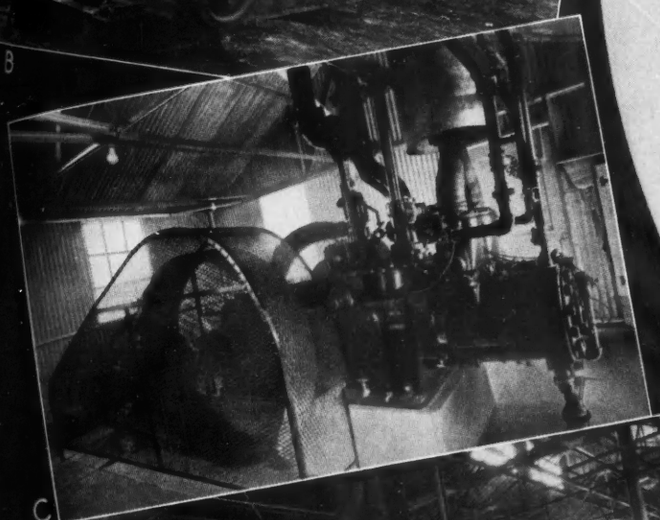
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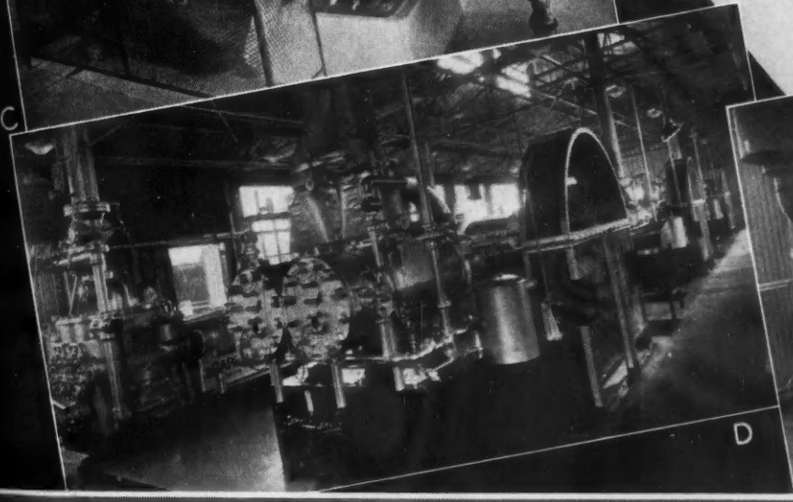
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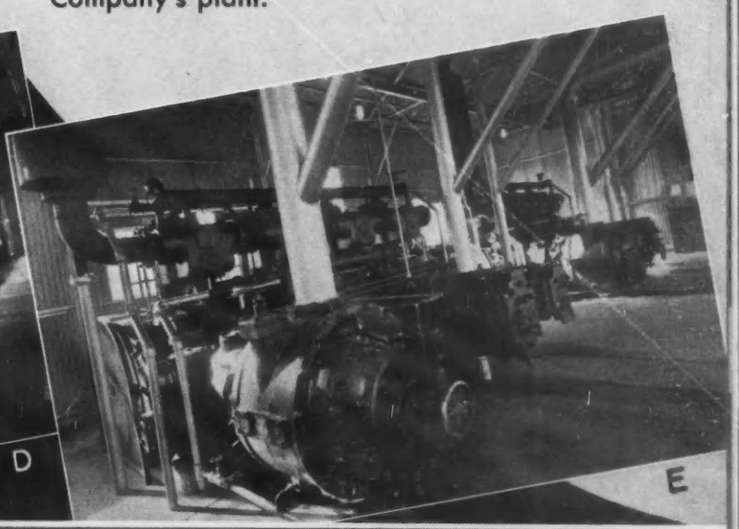

E

leaps ahead with COOPER-BESSEMERS

A—NOBLE, ILL. - Two 60 hp (at 600 rpm) type G-SD gas engines driving 40 kw electric generators for Wabash Pipeline Company.

B—CLAY CITY, ILL.—40 hp (at 400 rpm) type G-SD gas engine, equipped with radiator, driving a gear unit for Pure Oil Company.

C—BEECHER CITY, ILL.—135 hp (at 290 rpm) Type G-AW gas-engine generating unit, in Carter Oil Company's Plant.

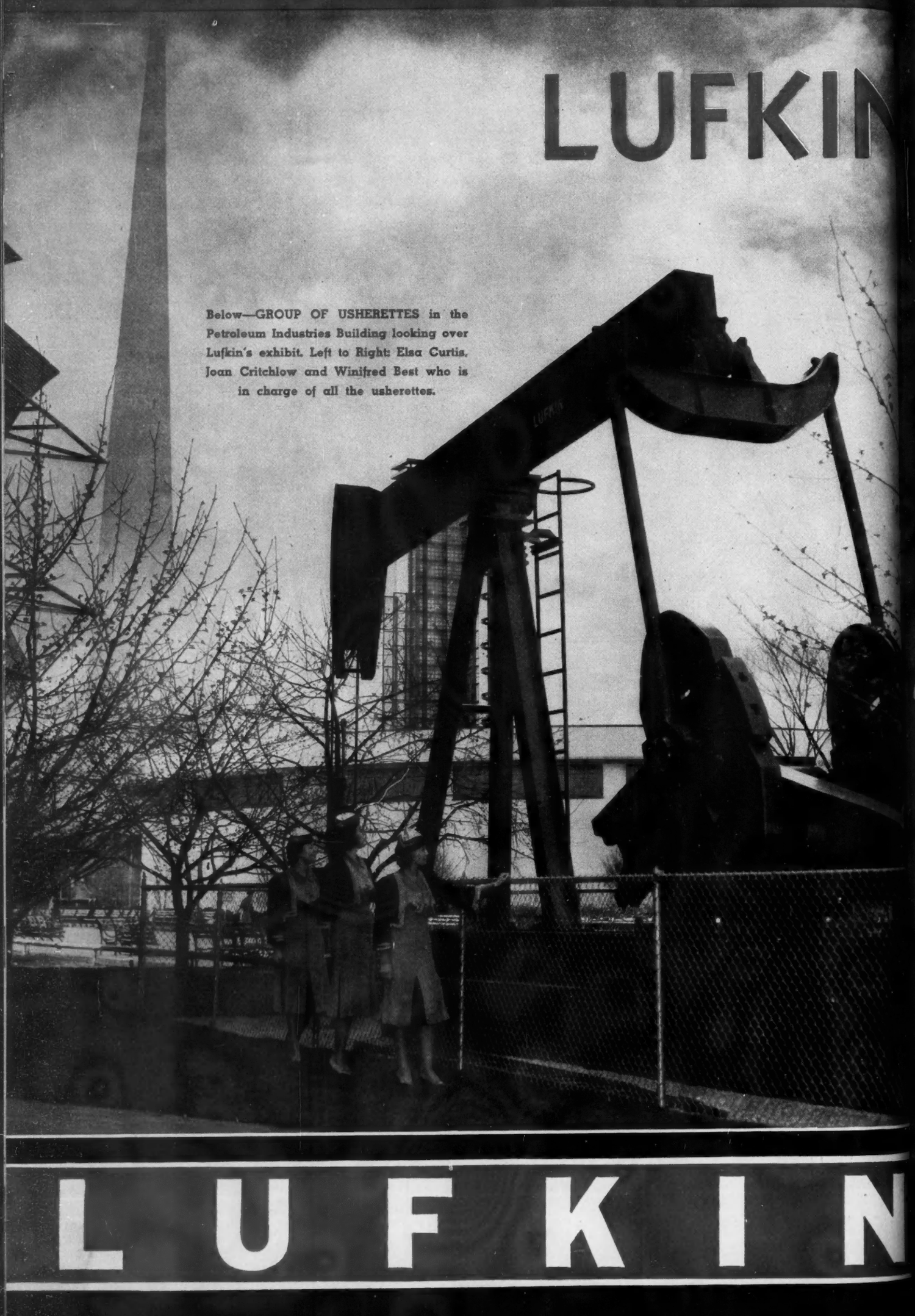
D—NOBLE, ILL.—Three 200 hp (at 225 rpm) Type G-DT gas engines driving oil-line pumps for Wabash Pipeline Company.

E—ST. ELMO, ILL.—Two 300 hp (at 300 rpm) Type G-MR four-cylinder angle compressor units, in Carter Oil Company's plant.

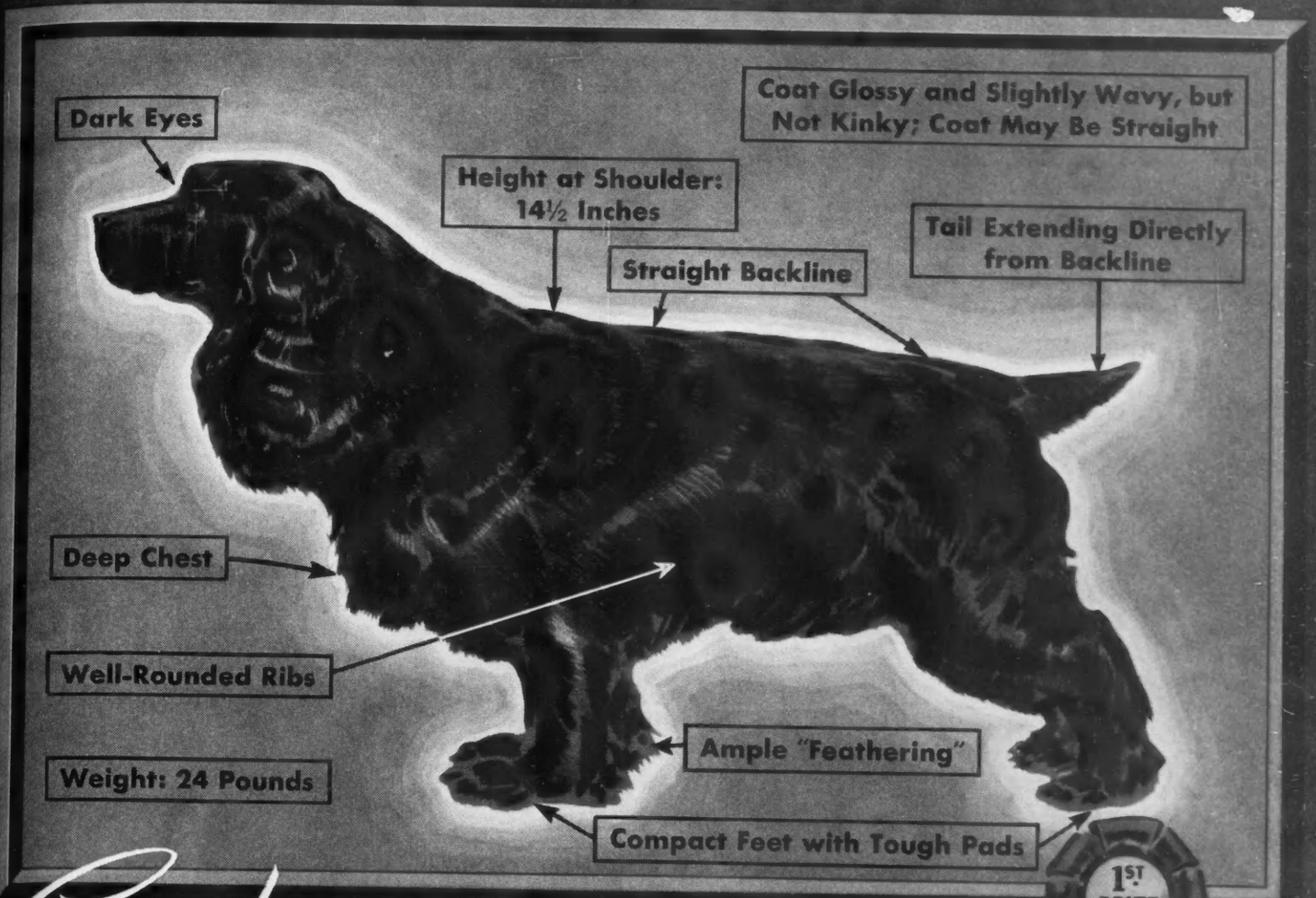
THE COOPER-BESSEMER CORPORATION

Mt. Vernon, Ohio — PLANTS — Grove City, Pennsylvania

35 West 43rd St. New York City | Mills Building Washington, D. C. | 640 East 61st Street Los Angeles, Calif. | 201 East 1st St. Tulsa, Oklahoma | 631 Spring Street Shreveport, La. | Magnolia Bldg. Dallas, Texas | 529 M & M Building Houston, Texas



Below—GROUP OF USHERETTES in the Petroleum Industries Building looking over Lufkin's exhibit. Left to Right: Elsa Curtis, Joan Critchlow and Winifred Best who is in charge of all the usherettes.


Dark Eyes
Coat Glossy and Slightly Wavy, but Not Kinky; Coat May Be Straight
Height at Shoulder: 14½ Inches
Tail Extending Directly from Backline
Straight Backline
Deep Chest
Well-Rounded Ribs
Ample "Feathering"
Weight: 24 Pounds
Compact Feet with Tough Pads

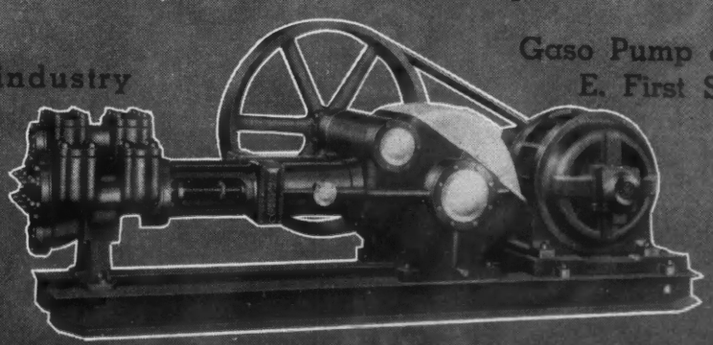
Specifications OF A CHAMPION

How does a dog show judge select from many contestants the one animal most deserving of the championship ribbon?

The answer is simple: for each breed of dog there are certain accepted standards of perfection; and the prize goes to that contestant which comes closest to meeting these specifications.

In the selection of oil-industry pumps, the experienced judge is likewise governed by definite standards: is the pump specifically designed for oil-industry use? Does its design include every advance that contributes to economical service? What about its performance record?

Because GASO Pumps meet all of these specifications, they have long been recognized as Champions of their class . . . Catalog on request.



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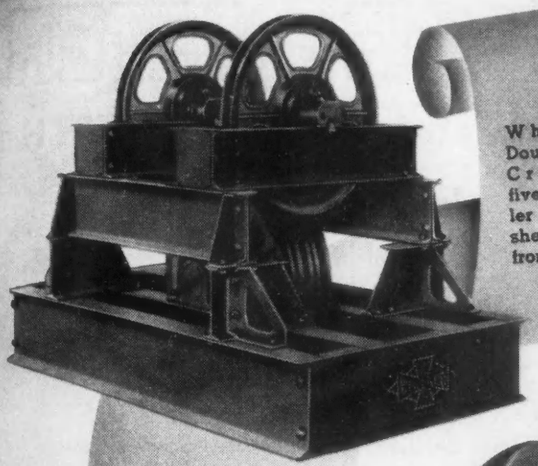
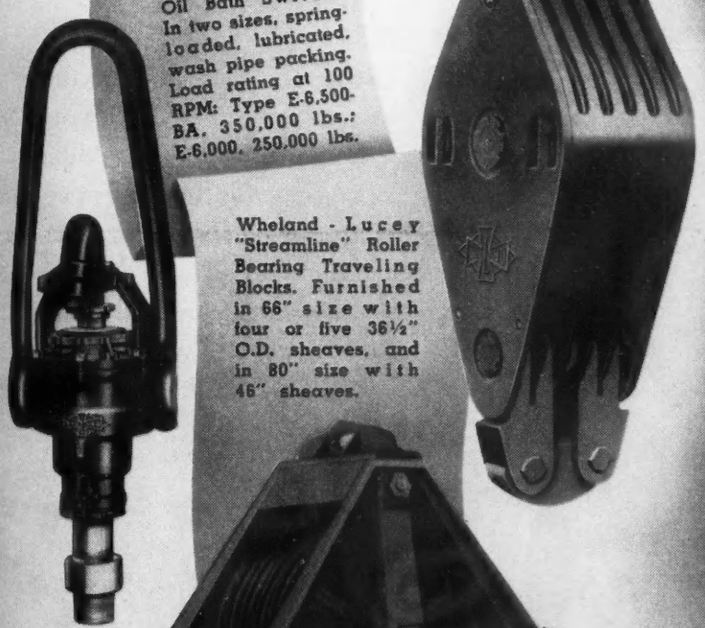
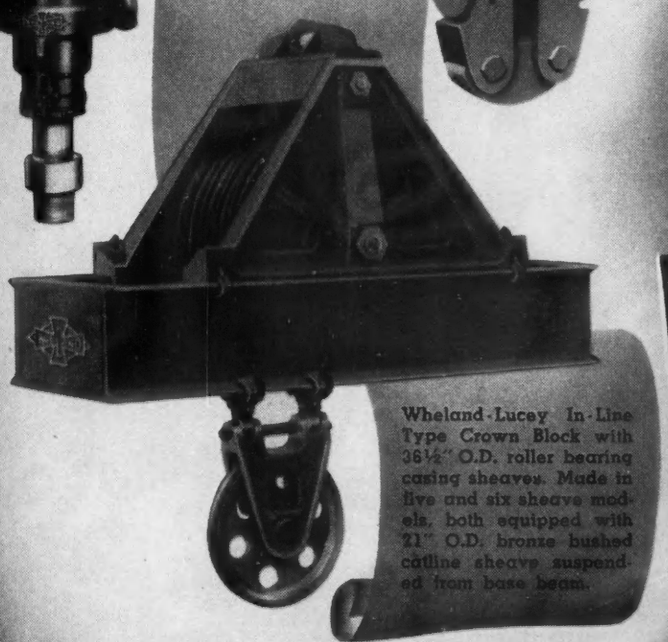


Wheland - Lucey Double Deck Type Crown Block with five 36½" O.D. roller bearing casing sheaves suspended from base beam.



Wheland - Lucey Oil Bath Swivels. In two sizes, spring-loaded, lubricated, wash pipe packing. Load rating at 100 RPM: Type E-6,500-BA, 350,000 lbs.; E-6,000, 250,000 lbs.

Wheland - Lucey "Streamline" Roller Bearing Traveling Blocks. Furnished in 66" size with four or five 36½" O.D. sheaves, and in 80" size with 46" sheaves.



Wheland-Lucey In-Line Type Crown Block with 36½" O.D. roller bearing casing sheaves. Made in five and six sheave models, both equipped with 21" O.D. bronze bushed catline sheave suspended from base beam.

Strength, safety, security and efficiency are the features combined in all Wheland-Lucey oil field equipment, which includes Drawworks, Rotaries, Power and Steam Pumps, Crown Blocks, Traveling Blocks, Swivels, Reverse Clutches, etc.

Wheland-Lucey Swivels are designed for deep drilling. An enviable record was established when, at 7830', the E-6500-BA Wheland-Lucey swivel suspended and rotated a dead weight of 240,000 lbs.

Wheland-Lucey Crown and Traveling Blocks are designed and constructed to carry maximum loads and achieve streamline speed with ease and security.

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CROWN BLOCK
Capacity: 80-tons.
Weight:
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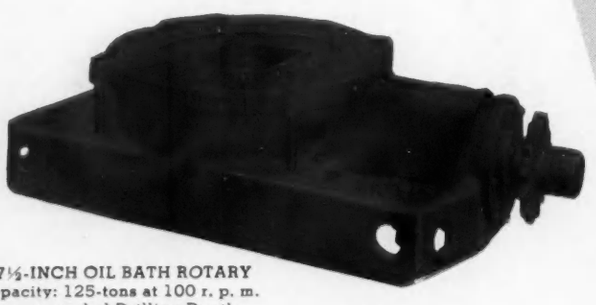
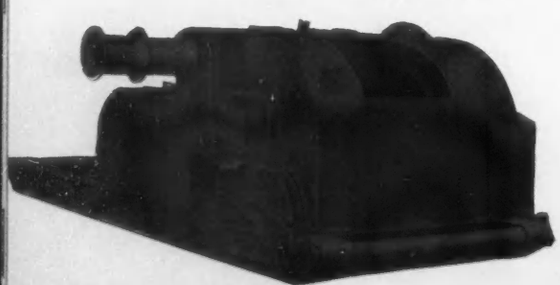
-sheave, 2500-lbs.

No. 534-30
TRAVELING BLOCK
Capacity: 80-tons.
Weight:
3-sheave, 3000-lbs.
4-sheave, 3600-lbs.

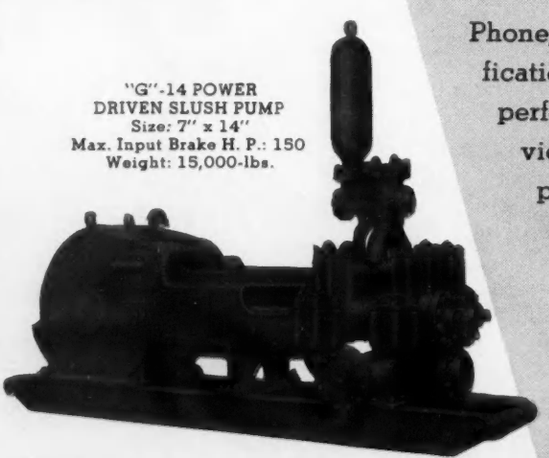
4-INCH
OIL BATH SWIVEL
Capacity: 45-tons.
Weight: 845-lbs.
or 75 ton capactiy 6-in.



17½-INCH OIL BATH ROTARY
Capacity: 125-tons at 100 r. p. m.
Recommended Drilling Depths:
5500-ft. with 4½" Drill Pipe
3500-ft. with 6 5-8" Drill Pipe
Weight: 5800-lbs.



C-200 UNIT DRAW WORKS
Capacity: 200-H. P, Max.
ecommended Drilling Depth:
000-ft. with 4½" Drill Pipe.
Weight: 19,000-lbs.



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DRIVEN SLUSH PUMP
Size: 7" x 14"
Max. Input Brake H. P.: 150
Weight: 15,000-lbs.

- Streamlined to meet the modern trend towards lower equipment costs and greater operating efficiency, the new, comparatively light weight series of Gumbo Buster machinery is definitely setting the pace in the shallow and medium depth drilling fields, where lower equipment investments, more compact designs and faster moves bring easier profits.

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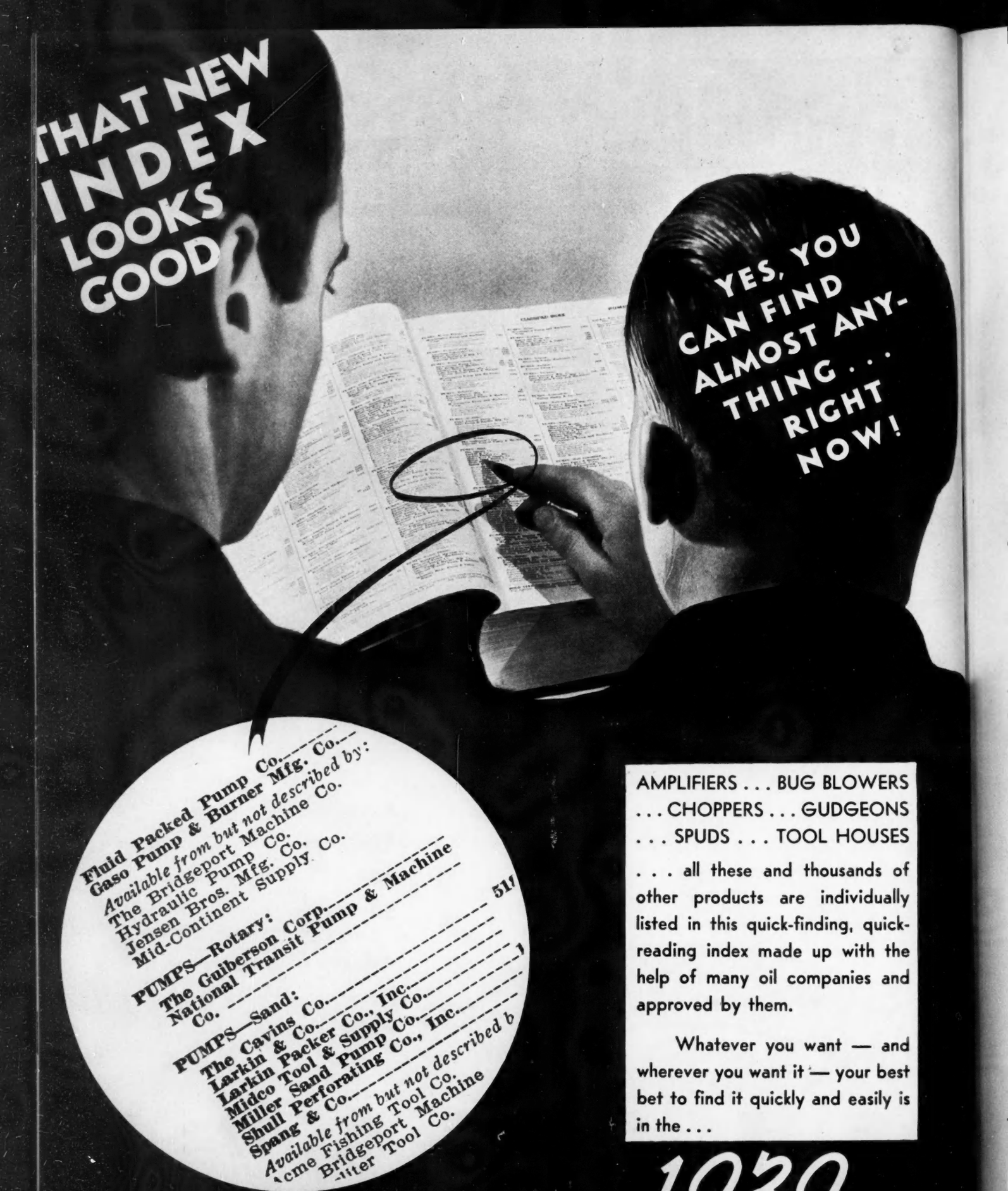
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We believe you'll agree that power engine operating costs are usually higher during the hot summer months, and that along with higher costs go more frequent shut-downs of pumping wells due to mechanical failures of power engines.

The best way to guard against these expensive interruptions of service is to use an engine that gives the maximum of efficiency both summer and winter. It has been proved by actual field tests that heavy duty, slow speed, Allis-Chalmers tractor-type engines are dependable the year around.

High temperatures, and consequent failures, in hot weather operation have been overcome in A-C engines. The extra large water capacity of engine block combined with a high turbulence pump insures proper cooling, and protects engine against consequent failures in hot weather operation. Water enters and cools cylinder head, valve ports and combustion chambers first. Exhaust valves are almost completely surrounded by water, and the entire cylinder wall, from top to bottom, is completely surrounded by water insuring even heat temperatures. High pressure lubrication to every working part provides the SUREST INSURANCE POLICY that can be secured.

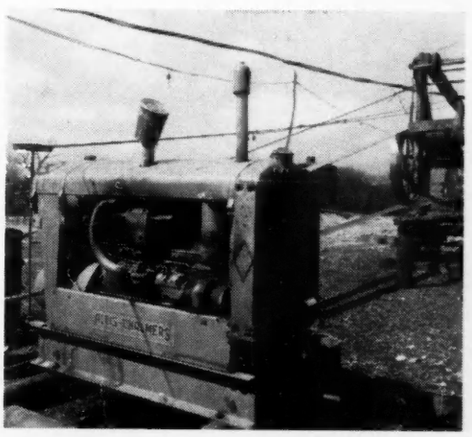
The slow governed speed of A-C engines, with high torque, permits steady pumping or potential taking with one size unit.

Allis-Chalmers engines burn natural gas or gasoline with equal efficiency and economy.

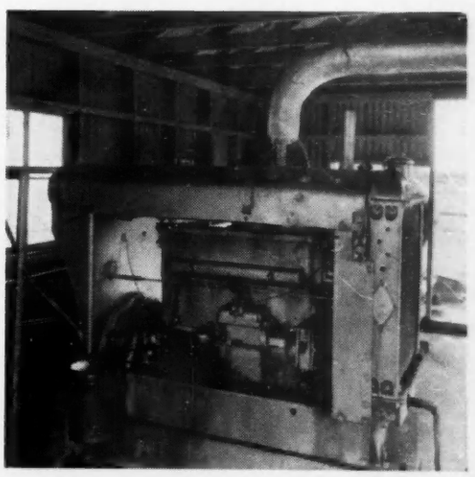
From the standpoint of maintenance and repairs, which must be considered in the working life of every engine, Allis-Chalmers furnishes motor repair kits, including pistons, pins, rings, sleeves, bushings, packing rings and locks all matched to fit, making possible a factory reconditioning job in the field for *much less money* than any rebore job. This, of course, greatly reduces the time an engine is out of service.

ALLIS-CHALMERS Engines are available in five sizes:

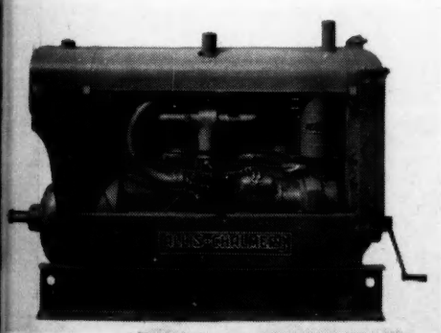
Model L—Torque 550 ft. lbs. at 700 r.p.m.
Model E—Torque 375 ft. lbs. at 700 r.p.m.
Model U—Torque 200 ft. lbs.
Model W—Torque 128 ft. lbs.
Model B—Torque 74 ft. lbs.



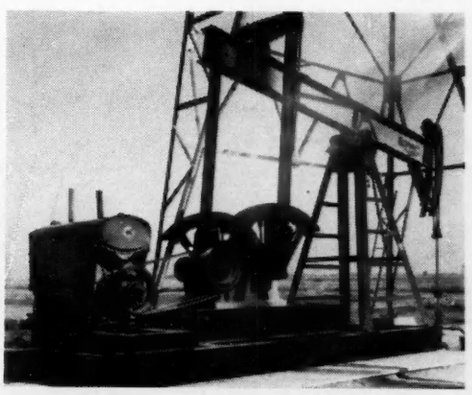
Allis-Chalmers Model E Engine being used to power spudder in Texas.



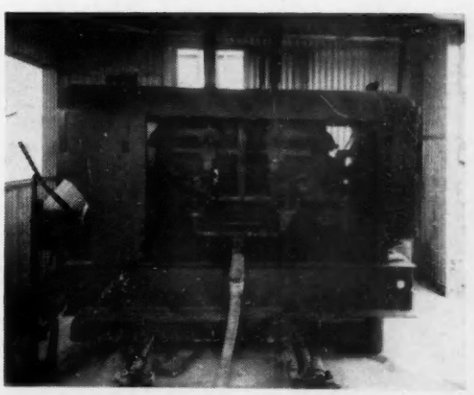
Allis-Chalmers Model U Engine driving pipe line pump for gathering crude. Dayton, Texas.



Allis-Chalmers Model E Engine. Four cylinders. Bore 5¼". Stroke 6½". Piston displacement 562 cu. in. Torque 375 ft. lbs. at 650-700 r.p.m.



Allis-Chalmers Model E Engine on pumping well near Noble, Ill.



Allis-Chalmers Model L on pumping well burning natural gas. St. Louis, Oklahoma.

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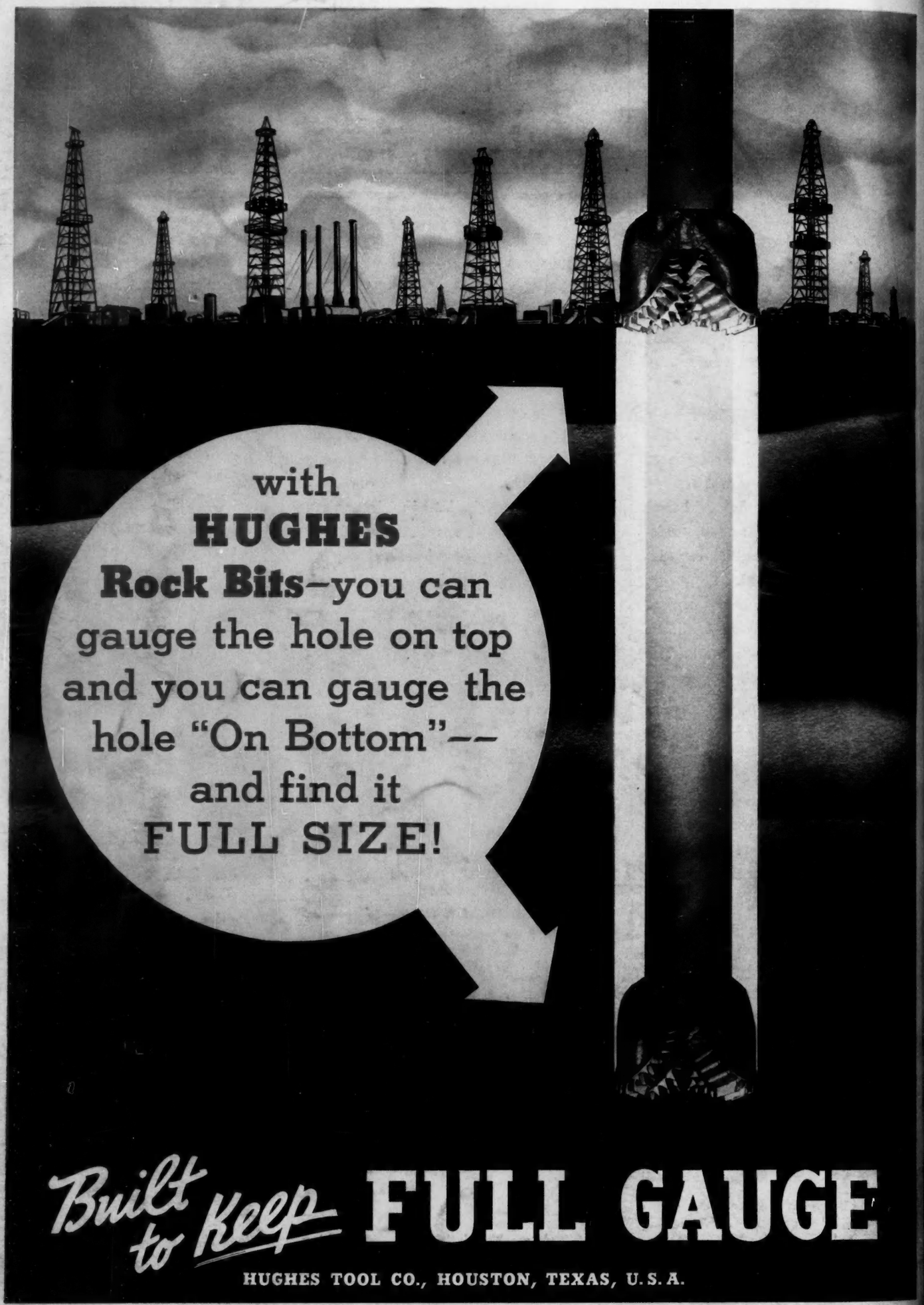
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